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IN THE

Supreme Court of the United States.

No. 48. OCTOBER TERM, 1930.

AMERICAN FRUIT GROWERS, INC.,
Petitioner-Defendant,

vs.

BROGDEX COMPANY,
Respondent-Plaintiff.

BRIEF FOR RESPONDENT-PLAINTIFF.

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IN THE

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NO. 48 OCTOBER TERM, 1930.

AMERICAN FRUIT GROWERS, Inc.,
Petitioner-Defendant,

vs.

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Respondent-Plaintiff.

BRIEF FOR RESPONDENT.

This case is before this Court on *certiorari* to the Circuit Court of Appeals for the Third Circuit. The opinion of the District Court is reported in 21 F. (2d) 110 (Vol. I, 16), and that of the Circuit Court of Appeals in 35 F. (2d) 106 (Vol. I, 571).

The litigation began nearly five years ago, when suit was brought in the District Court of Delaware for infringement of the respondent's Brogden & Trowbridge patent No. 1,529,461, relating to the preparation of fresh fruit for the market in order to avoid or minimize losses from decay. The trial, which followed the taking of numerous depositions (mostly on behalf of petitioner) in Florida and California, occupied six days in open court. The District Court found for plaintiff in every particular. On appeal the entire situation was reviewed and discussed at length before the Third Circuit Court of Appeals which affirmed the District Court in all respects. Among the four judges who thus passed upon the case below there was complete unanimity of opinion. There have been no conflicting decisions in any Circuit.

American Fruit Growers, Inc., the petitioner-defendant, is a powerful commercial fruit packing and marketing concern whose activities in the business of handling fresh fruits and vegetables are national in scope (Vol. I, 137, 235).

On the petition for *certiorari*, the State of Florida filed a brief *amicus curiæ*, and associated with it, in that brief, the Florida Citrus Growers Clearing House Association, described on page 1 of the brief as "the largest association of organizations and shippers engaged in the raising, selling and distribution of citrus fruits in Florida, handling over 80 per cent of the entire citrus crop of Florida."

The Department of Agriculture, represented by the United States, also filed a brief, *amicus curiæ*, on the petition for *certiorari*. The Department has been extensively relied upon by petitioner for assistance throughout this litigation. In its answer to the complaint, petitioner pleaded, as one of its defenses, prior invention by Department workers (Vol. I, 12). At the trial, six witnesses who had been in the employ of the Department for periods varying from five to nineteen years, testified for petitioner. One of them was still in the Department. The others had resigned, two of them being employees of defendant when they testified. Every effort was made to show that the process of the patent in suit had been developed by the Department prior to the filing of the application for the patent in suit, but the testimony was wholly unconvincing to both the trial court and the Court of Appeals. In fact, it appeared that, ever since the Department had inaugurated its widespread and extremely expensive campaign almost a quarter of a century previously, in the attempt to eliminate the enormous losses from blue mold decay suffered by fresh fruit packers and shippers, the Department had consistently held the view and taught the industry through official publications and public addresses by its experts that any attempt to control decay by chemical treatment would be ineffective and indeed worse than useless because positively injurious. Not until late in 1924, almost a whole year after plaintiff had conducted a public commercial

demonstration of the process of the patent, which was attended by Department and other experts, did the Department finally "discover" the borax treatment and announce it to Florida packers in official communications (Vol. II, 1458) which show on their face that the experiments leading to the Department's "discovery" did not begin until after plaintiff made that public demonstration.

Thus, in effect, we here have certain large commercial fruit packing and marketing organizations, including the defendant, supported in their attack on the patent in suit by a Government department which habitually (and properly) competes with outsiders in developing methods of handling and packing fresh fruit, but whose asserted prior development of the invention of the patent in suit has been unhesitatingly rejected by both courts below, without a dissenting voice.

Against this powerful combination stands the plaintiff, a small corporation, whose chief assets originally were an abiding faith that the fresh fruit decay problem could be solved in some way, and the persistence of inventors sufficiently independent in thought to dare to go directly contrary to the settled beliefs and prejudices of the recognized experts by determining to solve the problem through chemical control. Finally, the thing was done and the new process was successfully demonstrated commercially, with the result that packing house practice was in this respect revolutionized.

The patent in suit covers that revolutionary development. The courts below have in effect held it to be a pioneer patent. It represents a property right created solely through the intelligent inventive efforts of members of a small business organization fighting on persistently in the very teeth of unanimously adverse expert opinion and the settled practice of the art. Now that the advance has been made and expert opinion forced to reverse itself, powerful infringers have joined hands in an effort to overturn concurring decisions of the lower courts in an ordinary patent suit. There has been

enlisted the aid of a Government Department evidently still smarting under the emphatically adverse holding of the lower courts with respect to its own asserted priority in the field with which the patent deals. And a brief has been filed by the Attorney-Generals of seven states in further recognition of the importance of a process which their Departments, also, had been unable to develop for themselves.

STATEMENT OF THE FACTS.

The problems discussed in this case arise largely because of the fact that the large fruit growing localities, California and Florida, are far from the centers of consumption. So the fruit (mostly oranges and lemons) must be shipped over long distances, and any considerable decay occurring before the fruit reaches the consumer results in large losses to this important industry—and the losses were enormous. Even in 1918, there was an estimated loss of $800,000, in the Florida crop alone, due to decay in shipment (p. 18, *infra*). In 1921 such losses often left, to the grower, not more than enough to cover handling and transportation charges (p. 18, *infra*). This occurred in spite of the fact that (as we shall show) careful methods of gathering and handling fruit to avoid cuts and bruises had been persistently preached ever since 1902, and had long been practiced.

Among the conclusions of the District Court and the Court of Appeals, in their concurring opinions, the following are outstanding:

1. Blue mold decay in commercial shipments of fresh fruit, particularly citrus fruit, resulting from entry of decay spores into surface wounds which are always inevitable to a greater or less extent in large-scale handling of fresh fruit from the tree to the consumer, was the bane of the industry for many years prior to the invention of the patent in suit.

2. For nearly a quarter of a century there had been persistent, systematic effort by the recognized experts of the

industry and of the Department of Agriculture to solve the problem, but the only remedies the experts could suggest were to avoid all injury by very careful handling, and to refrigerate; but complete avoidance of injury was impractical, and large decay losses continued.

3. The need for a remedy to supplement careful handling and refrigeration in decay control was a long felt want of the industry which the patentees of the patent in suit were the first to supply.

4. The problem here involved, and that with which the invention in suit specifically deals, was "peculiar to commercial large scale methods of handling fresh fruit"; that is, those methods led to inevitable surface injuries to the fruit, the evil consequences of which the commercial fresh fruit packer had no way of avoiding.

5. The patentees of the patent in suit were the first to recognize that, by impregnating, and maintaining impregnated, with a relatively mild chemical agent, the rind tissues exposed by the inevitable surface-wounding of a large proportion of fruit under the conditions prevailing in and peculiar to the commercial large-scale handling and packing of fresh fruit in preparation for market, blue mold decay in fresh fruit shipments could be effectively controlled and reduced to a practically negligible minimum.

6. Such a thing was not taught by the prior art relied upon by defendant; for, down to 1923, it was the experience and settled belief of the industry and of the long line of eminent Department of Agriculture specialists and experts in fresh fruit handling that, under the conditions characterizing commercial large-scale handling of fresh fruit, blue mold decay could not possibly be stopped through chemical treatment unless one used highly toxic chemicals so strong or powerful in their action as to injure the skin of the fruit and thus render it commercially valueless. Hence, "the

opinion was practically unanimous that chemical treatment was not helpful but harmful."

7. There was no evidence sufficient to prove any of the numerous prior uses alleged.

8. As soon as plaintiff had introduced the invention into commercial use, it was eagerly seized upon by the industry and lauded by the experts.

9. "All this shows that the citrus-growing world had found in this patent what it had been earnestly and unitedly searching for during a quarter of a century".

This Court has held that, in an equity case where both lower courts concur, their findings will not be disturbed unless clearly wrong; and that where an examination of the testimony shows that it tends to sustain them, it cannot be said that the conclusions which the lower courts drew from that evidence were clearly erroneous. *Continental Paper Bag Co.* v. *Eastern Paper Bag Co.*, 210 U. S. 405, 416; *Dun* v. *Lumbermen's Assn.*, 209 U. S. 20, 23, 24.

Petitioner's position here, as evidenced by the statements in its brief, is that the conclusions reached by the courts below in this case were all wrong and utterly mistaken. Notwithstanding the complete agreement of the District Court and the Court of Appeals in their decisions, petitioner contends that they construed the evidence incorrectly on every point. That position, however, is erroneous as will appear from a review of the evidence upon which the conclusions were based.

The long and fruitless search for a remedy:

This is shown not only by the testimony to which we shall, later, refer, but also by authoritative official publications of the United States Department of Agriculture and of State Agricultural Departments, which public documents

are *prima facie* evidence of the facts which they state. See *Evanston* v. *Gunn*, 99 U. S. 660, 666.

At least as early as 1902, more than twenty years before the remedy was discovered, the yearly loss from rotting of oranges and lemons due to decay attributed to blue mold (*penicillium digitatum*) was appreciated, and it was pointed out that *the mold enters the fruit through wounds or abrasions in the rind* (University of California Agricultural Experiment Station Bulletin No. 139, Vol. I, 605-10). In 1904, the "outrageous losses by decay" amounting to several million dollars during the preceding eight years, were complained of, and it was recommended that injuries to the fruit, resulting in abrasions which the blue mold spores may enter, *should be minimized by more careful methods of gathering and packing.* (The Florida Agriculturist, Vol. I, 616; Citrus Fruits and Their Culture, Vol. I, 621).

By 1905, the vital necessity for doing something to relieve the situation had spurred the United States Department of Agriculture into activity. Its pomologist (Powell) in charge of U. S. Fruit Decay Investigations announced the beginning of an investigation into methods of handling citrus fruits in groves, in packing houses and in transit, to determine the relation of these methods to the shipping and keeping quality of the fruit, and said that

> "most of the packing house and transportation decays in both oranges and lemons are caused by the common *blue molds* * * *. These molds seldom attack a perfectly healthy fruit. They seldom gain entrance through a skin that is not injured or that is not physiologically weak." (California Cultivator, Vol. I, 624-5; and Department of Agriculture Year Book, Vol. I, 638).

Careful handling, as a preventive method was recommended; but it was also recognized that when the fruit is packed in a house equipped with machinery the chance of injury is increased (Vol. I, 639). As the industry grew in volume, machine-handling became a necessity, and, even as

early as 1905, the industry was a large one, California alone shipping 30,000 carloads valued at $27,000,000 (Vol. I, 634).

The magnitude of the problem had early compelled the Department of Agriculture to extend its activities to Florida where by 1907 an investigation of conditions in the citrus industry had been going on for some time, as appears from the Proceedings of the Florida State Horticultural Society (Vol. I, 649). This publication contains an address, by the Assistant Pomologist, Tenny, which states (p. 651) that it was not uncommon for cars to arrive at destination with 20 per cent. or more decay, sometimes as much as 50 per cent.; and 15 per cent. was considered a conservative estimate of the average decay. This Department expert estimates that even at that early date, "you orange men of Florida are losing each year close to $1,000,000 from this one cause alone;" and he emphasizes "careful handling", again and again (pp. 652-3). With regard to the matter of adding substances to the wash water, that expert states (p. 660):

> *"I know of no wash yet discovered that will kill the spores of the decay fungus and at the same time not injure the fruit."*

In 1908, the Department of Agriculture issued Bulletin No. 123, entitled "The Decay of Oranges While in Transit from California" (Vol. I, p. 664), one of the classics in the literature of the industry. Emphasis is laid upon the widespread character of the California investigation. It appears that the extent of the work required the development of a special corps of scientific workers of the Department. The conclusion is reached that washing should be avoided wherever possible (pp. 667-8, 687-691, 708-9). The authors further say (p. 709):

> *"It has often been suggested that the blue mold might be killed by a disinfectant in the wash water as is done with the parasitic fungus of the lemon which produces the brown rot. This does not appear from preliminary studies to be promising or advisable."*

Precooling of fruit before shipment is discussed (Vol. I, 724-5) and, with respect to refrigeration it is stated:

> "The icing of the fruit retards the development of the decay temporarily. It transfers the decay from the shipper to the receiver."

Careful handling of the fruit to avoid mechanical injuries and omission of brushing or washing wherever this is feasible, are the principal recommendations made (pp. 745-6).

In December, 1908 the Department of Agriculture also reported on the work it had been doing in trying to solve the problem of decay in Florida fruit. It issued Bureau of Plant Industry Circular No. 19 (Vol. I, 766) on "The Decay of Florida Oranges while in Transit and on the Market." In conclusion the authors state (Vol. II, 776) that

> "the decay of oranges is closely connected with rough methods of *handling* the fruit. Careful methods result in good keeping quality. Rough and careless work should be expected to cause decay, and the experiments show that this is true."

The widespread interest aroused by the work of the Department of Agriculture in investigating fruit handling methods, and the general publicity it was given, are further indicated by articles which appeared in the American Review of Reviews in 1909 on "Improved Methods of Fruit-Handling" (Vol. II, 777), in the Bureau of Plant Industry Circular No. 26, of May 26, 1909, on "Some Factors Affecting the Keeping Qualities of American Lemons" (Vol. II, 788), and in the 1909 Proceedings of the Florida State Horticultural Society (Vol. II, 808) which contains an address by an expert of the Department of Agriculture. In all of these 1909 articles, care in handling was still the only thing recommended, but, here again, *it was recognized that in the large scale operation of packing houses it is impossible to avoid more or less rough handling and hence injury to the fruit* (Vol. II, 810-11). In another address

reported in the last cited publication, it is said that most of the fruit is washed or brushed, and (p. 823) that:

> "Some of it is run through a solution of permanganate of potash to kill all germs, but Mr. Powell [expert of the Department of Agriculture] told me that *no chemical could be used that would kill the spores of blue mould.*"

In 1910, Stubenrauch (in charge of fruit transportation and storage investigations by the U. S. Department of Agriculture) delivered an address on "Causes of Decay in Florida Oranges in Transit to Market", and careful handling is again urged as the only means of lessening decay losses (Vol. II, 835). In the discussion following the address is recorded the following colloquy (Vol. II, 848):

> "Mr. * * *: *I would like to ask if any success has been met with where antiseptics are used in the wash.*
>
> "Mr. * * *: I tried one experiment. I washed the oranges with water in which there was a small percentage of salicylic acid. After several days the oranges were carefully examined and the decay was found to be practically zero.
>
> "Mr. Stubenrauch: *We tried a number of these experiments in California, and had a man there one season working on that alone, but we did not get any results that were worth noting".*

Thus again we find Department experts advising against chemical treatment of the fruit in attempting to control decay, because chemical treatment was ineffective and was proved to be ineffective by the work of the Department.

In 1911, one investigator, who had been trying various disinfectants, reported

> *"Some of the chemicals we used appeared to increase the amount of blue mold decay due probably to injury to the rind"* (Vol. II, 870).

So we have here one more signpost pointing directly away from the use of chemicals to prevent blue mold decay, and the experts were still advocating only careful handling, and

decrying refrigeration because "a bruised orange may be transported in sound condition if it is iced or precooled quickly after picking, but it is likely to rot as soon as it leaves the car and becomes warm and moist enough for the decay to develop" (Powell, "The Decay in Citrus Fruits While in Transit", Vol. II, 880).

A couple of weeks later the same Powell, who had done so much work along this line as an expert of the Department of Agriculture, again warns against rough handling and concludes ("The Prevention of Decay in Citrus Fruits", Vol. II, 883) with a long list of "don'ts" to packing house managers. Among these is the following:

> *"Do not try to disinfect the water for blue mold.* This disease cannot be killed by any strength of copper sulphate or permanganate of potash that would not be injurious to the fruit" (p. 887).

The blue mold decay problem was so serious in that year, 1911, notwithstanding instructions to the industry for some five or six years previous that all they had to do was to handle the fruit carefully to avoid decay, that the Department of Agriculture found it necessary, at the request of the Citrus Protective League of California, to make another investigation of the industry (Vol. II, 889). This was done post-haste and the results published forthwith (Bureau of Plant Industry Bulletin, Vol. II, 888-96). In this bulletin we find the same warnings and recommendations as to careful handling which appeared in earlier bulletins and papers and which had, by now, become stereotyped. And the University of Florida Agricultural Experiment Station (Vol. II, 899) reported that careful handling is the remedy for blue mold decay.

In 1912, Ramsey, another expert of the Department of Agriculture, delivered an address on "The Relation of Handling to Decay of Florida Oranges in Transit and on the Market", in which he outlined the work done by the Depart-

of Agriculture in Florida continuously during the preceding six years and states (Vol. II, 905) that

> "during the last three seasons the work has been extended to nearly every shipping point in the State, and no effort has been spared to acquaint each and every grower with the results of this work, and the *necessity of care in handling* both in the field and packing house."

And this Department of Agriculture expert adds (pp. 905-6):

> "We feel that it is now up to the industry to put into effect the results of the work as the cause of decay is generally known and the *methods of handling* to avoid losses from decay has been most fully demonstrated. This has been done through actual work at a great number of packing houses, and by a series of meetings at various points where meetings were requested or sufficient interest was shown to warrant holding them. This season therefore will probably be the last that the Department of Agriculture will carry on the citrus handling investigations in Florida."

There now—that problem is solved and research work is to end. This expert further says (Vol. II, 915):

> *"The question is often asked whether any chemical can be put into the wash water to kill the blue mold spores in it or on the fruit. Considerable work has been done along this line and nothing has been found that can be put into the water which will kill the blue mold spores and not injure the fruit. The only thing to do is to keep the fruit free from injuries."*

That is, he agrees with the other experts that chemical treatment is out of the question because it is ineffective. Careful handling was still the only thing recommended as a cure (see, also, "The Handling and Precooling of Fruits for Transportation" by Stubenrauch, a Department of Agriculture Expert, Vol. II, 922; and "Better Fruit", Vol. II, 926).

But, in spite of the finality of the conclusion, large losses from decay continued—and experimental work went on.

In 1913, McKay, an Assistant in Fruit Transportation and Storage Investigations, U. S. Department of Agriculture, delivered an address on "Citrus Fruit Handling and Storage" (Vol. II, 936) in which, again, "Careful Handling" was hammered into the growers and packers to prevent backsliding. This Department expert thought that packing house operations were by that time about as nearly perfect as is possible, but that the main trouble was in picking and transporting fruit to the packing house (Vol. II, 941-2):

> "If necessary, cut down the output of your packing house one-half during a period of high decay, but see that every orange you ship is handled carefully all the way from the tree to the car. Unless absolutely necessary, and unless thorough drying can be obtained, it is advisable not to wash fruit during the warm humid weather. There is abundant evidence in support of the statement that carefully handled uninjured fruit will keep under the most unfavorable conditions."

But, in the course of the succeeding discussion, it appeared that "from six years of practical experience it has been thoroughly proved that it is *impossible* to avoid *all* injuries from tree to packing house" (Vol. II, 953). Evidently there were some insurgents who were not altogether convinced that "careful handling" was or could be a universal panacea. Though another man said, during the course of this discussion, that "that is the whole secret—get your men interested, get them to realize that careful handling on their part is the secret of the whole thing" (Vol. II, 959).

In 1914, another major publication of the Department of Agriculture was issued—Bulletin No. 63, on "Factors Governing the Successful Shipment of Oranges from Florida" (Vol. II, 967), which summarized very fully the methods of investigation, information and data collected, the results of extensive tests of various kinds, and the conclusions

reached. Careful handling is again the only answer to the existing difficulties and (Vol. II, 991-2):

> *"An injured orange,* whether grown in California or in Florida, *will decay** whenever the conditions for the development of blue mold are favorable. A sound orange in good, healthy condition, whether grown in California or Florida, is able to resist blue mold decay".

and (Vol. II, 1011):

> *"As yet, no disinfectant has been found which proves effective against blue mold. Extensive investigation of this phase of the subject has shown the spores to be so resistant that any solution used to destroy them must be of sufficient strength to injure the surface of the fruit.".*

Observe again the positive pronouncement by the experts that the matter of trying to check blue mold by chemical treatment has been thoroughly gone into and found to offer no hope whatever.

In a 1914 Bulletin of the Porto Rican Board of Commissioners of Agriculture (Vol. II, 1052-4), an expert of the U. S. Department of Agriculture tells of "The Handling of Porto Rican Oranges", etc. The decay of Porto Rican citrus fruit is shown to be due to blue mold. Careful handling is recommended, as usual, to stop blue mold decay. The problem seems to have been the same everywhere that citrus fruits were being grown.

In the 1914 Proceedings of the Florida State Horticultural Society is reported a symposium on "Packing and Shipping Citrus Fruits" (Vol. II, 1054), in which is repeated what the Government experts had been preaching about careful handling, and one of the members states (p. 1058):

> "Let it be understood that my subsequent arguments are based on the supposition that the utmost care from tree to packing house, and through all steps in the pack-

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* This remained true until the invention of the patent in suit.

ing house to car, including washing, have had the best management as to personal and mechanical *handling;* and that fruit with a perfectly *sound rind* is not inoculable by blue mold—yet, in spite of this utmost care, *undiscernible injuries* will pass the graders.

"Prevention from decay from these *undiscoverable*—and accidentally overlooked—injuries has been the theme of my studies."

This idea was growing, namely, that, with even the greatest care, injuries cannot be prevented. Thus, in the same year, 1914, Ramsey, who had done so much work for the Department of Agriculture, said (Vol. II, 1066):

"There are, however, two factors which make it extremely difficult to continuously and under all conditions deliver oranges on the market in absolutely sound condition, and to have them remain sound for a reasonable time after arrival on the market. *Under commercial conditions it is almost physically impossible to handle fruit with a sufficient amount of care to avoid inflicting injuries of some sort.* High winds oftentimes are the cause of much fruit being thorn punctured on the trees, and it is impossible to grade out all such injuries in the packing house. If the weather following such winds is moist and rainy, there is certain to occur considerable decay, both in transit and on the market, which cannot entirely be avoided by the most careful methods of handling. Another factor which enters into the problem of delivering the fruit in sound condition is the stem-end rot more or less prevalent in most sections of the state. *Decay of this kind cannot be controlled through careful handling methods.*"

Ramsey then proceeded to announce (pp. 1066-7) the inconclusive results of an investigation by the Department to determine whether such decay could be controlled by refrigeration or precooling.

The far flung character of the blue mold decay problem is further indicated by an article in the Agricultural Gazette of New South Wales of November 2, 1914, on "Fungus and

Other Diseases of Citrus Trees" (Vol. II, 1075). Blue mold is discussed, and it is said (p. 1079):

> "The best remedy is to *avoid most carefully any injury to the skin,* and then to wrap each fruit in paper; the spores are thus prevented from spreading and the disease is limited to fruit infected before it is packed."

Trouble with decay of citrus fruit in Porto Rico is further described in the Porto Rico Progress for December 23, 1914 (Vol. II, 1080). The article deals principally with a form of rot believed to correspond to the Florida stem-end rot. Referring to attempted methods of control, the article states (p. 1082):

> *"It was not expected from what had been noticed that dipping the fruit into a fungicide would give beneficial results as such disinfection must be very superficial at best and hardly able to penetrate to the point of infection which is apt to be well into the tissue at the stem end.* Spores germinating on the surface would be prevented from penetrating the fruit by such treatment and, as we have noted, it is not a question of spore infection from other fruits. However, oranges were dipped immediately after being brought into the packing house into a two per cent. solution of copper sulfate for five minutes. *This fruit later showed a somewhat larger percentage of decay than fruit picked at the same time but not placed in the solution.* Similar results were obtained with grapefruit. It would seem clear that this solution is of no value so used. *It is not believed any solution of penetration and disinfecting power to kill the infection and not injure the fruit will be found, but further work in this direction is being carried on."*

In 1915, there was another Department of Agriculture publication, on "Handling and Shipping Citrus Fruits in the Gulf States," by the Department's "Pomologist in Charge of Fruit Handling and Storage Investigations" (Vol. II, 1097). Here it appears that, *ten years after the industry had begun to be told by the experts that careful handling would eliminate blue-mold decay,* the losses were still enor-

mous due to the same old trouble, namely, the spores gaining entrance to the fruit through injuries to the skin (pp. 1099, 1114). But the expert still insisted, as did his predecessors, that extensive investigations had conclusively demonstrated that citrus fruits can be handled with sufficient care to prevent mechanical injury and to deliver the fruit sound on the market (p. 1101).

In the same year, 1915, a text book on "Citrus Fruits" stated that "*the universal preventive for these decays is careful handling* of the fruit in the packing house, which, if conscientiously enforced, will reduce the loss to a minimum" (Vol. II, 1134). And, with reference to stem-end rot the author says that *"the application of fungicides to the trees or disinfectant to the wash-water does not control the disease"* (Vol. II, 1135). This publication is another illustration of the general acceptance, at that time, of the principle of careful handling as the sole remedy, and the idea that *chemical treatment of fruit in the packing houses is unavailing.*

In the next year, 1916, careful handling was again insisted upon as the sole remedy, helped out to some extent by costly precooling and refrigeration, and in 1917 there was only the same insistence (Vol. II, 1136-1159).

In the July, 1918, Quarterly Bulletin of the State Plant Board of Florida, is an article on "The Theory and Practice of Sanitary Precautions in Grove and Packing House Operations", by the Assistant General Inspector, State Plant Board. Regarding decay losses in transit the writer of this Florida State Bulletin says (Vol. II, 1165-6):

> "In other words, loss from decay in transit is not alone loss of the fruit which is decayed, but the general price of the remaining fruit is lowered. The time was when approximately ten per cent. of the Florida fruit shipped to the North was lost through decay and molds. Through the educational campaign conducted by the Florida Experiment Station for the past few years and as the result of better picking and packing house methods, particularly more *careful handling* of the fruit than formerly, this loss has been greatly reduced. On

> the whole, taking into consideration all shipments and one season with another, it is likely that the loss from these causes is *still* in the neighborhood of five per cent. Assuming that the normal citrus crop of Florida is 8,000,000 boxes and that the growers receive an average price of $2.00 per box, a loss of five per cent. means an annual loss of $800,000.00 on the Florida crop."

And the article points out (p. 1166) that blue mold decay was still the most important cause of deterioration of fruit in transit. Evidently the methods taught by the Department of Agriculture, for so many years, had by no means eliminated Florida's decay problem even by 1918. Yet Florida is one of the *amici* strenuously supporting the defendant here.

The decay problem was still a live one in 1920 as we see by the California Citrograph containing an article on a "Crusade Astir to Improve Methods of Fruit Handling" (Vol. II, 1184). The orthodox methods of careful handling are again emphasized.

The monthly Bulletin of the Department of Agriculture, State of California, for September, 1920 (Vol. II, p. 1186), also contains an article on decay in citrus fruits during transportation, by a Pathologist of the U. S. Department of Agriculture. This article states that the losses from blue mold decay are simply due to *careless handling*. The writer has nothing new to offer (pp. 1191-4).

In 1921, the California Citrograph prints an article by Ramsey, the former expert of the Department of Agriculture, but now Field Manager of the California Fruit Growers Exchange, on "Need of Care to Prevent Blue Mold Decay in Transit" which states (Vol. II, 1195) that:

> "During the past few weeks many shipments from Southern California have shown decay of from 5% to 15%, meaning actual losses to the shippers of from 50 cents to $1.50 per box. *With our present costs of production, packing and transportation, losses of from 50 cents to $1.50 a box oftentimes mean that our shipments will not bring more than handling and transportation charges, in fact, frequently less.* Under these conditions it is abso-

lutely essential that each and every shipper analyze thoroughly his local problem with a view of reducing to a minimum the decay in transit."

Then follow the customary recommendations as to *careful handling* in the field and packing house, with special emphasis on the necessity for grading with extreme care and throwing into the culls all injured fruit. *The same old decay problem and the same old remedies.* Yet California, too, is among the *amici* seeking to defeat the patent in suit.

A few months later we find Ramsey sending out "To All Shippers" circulars of December 20 and 21, 1921, respectively (Vol. II, 1329-1333), advising the shippers as to the best methods of combating decay. As for *blue mold* decay, there are the usual directions to handle the fruit *carefully* from the tree to the car, with special emphasis on keeping decayed oranges out of the soaking tank; and (p. 1333):

> "Special attention should be given to sorting out all decayed fruit before it goes into the soaking tank, the brushes, or through the machinery. *You cannot depend upon Blue Stone in the washwater to kill Blue Mold spores.* All Blue Mold oranges going into the soaking tank, through the brushes and machinery, will serve to innoculate every orange with Blue Mold."

Here we have it again—chemical treatment of the fruit to control blue mold decay is out of the question.

In 1923, the U. S. Department of Agriculture Circular 293 discusses "Commercial Control of Citrus Stem-end Rot" and a foot note (Vol. II, 1201) explains that in addition to stem end rot, blue mold rot is a common cause of decay, developing at lower temperatures than stem end rot, and gaining entrance to the fruit at any point where the skin is bruised or scratched, and

> "it *requires different procedure of control* from the stem end rot. Briefly, the fruit *must be kept free from bruises and scratches of all kinds,* and from long continuance of

surface moisture—from rain or dew, from washing, or from condensation ('sweating')—and it should be held at low temperatures (40° to 45° F.)."

Thus, *even in October, 1923, after the filing of the application for the patent in suit, it is the same old refrain,—"Careful handling and refrigeration".*

Orchard methods of trying to control stem end rot are discussed to some extent in this bulletin, but the authors recommend especially the removal of the stem "buttons" from the fruit as a very effective scheme according to their observation, and say (p. 1211):

"Chemical disinfection in the soaking tank has not been effective."

This is especially interesting in view of the fact that the process of the patent in suit has proved effective to reduce stem-end rot as well as blue mold decay (p. 43, *infra*).

In 1923 was also published Western Australia Department of Agriculture Leaflet No. 114, "Blue Mold on Citrus Fruits" (Vol. II, 1215). The heavy blue mold decay on export shipments from Australia is deplored. The nature and causes of blue mold decay are discussed and the necessity for careful handling is emphasized. The available control methods are summarized (pp. 1218-19). Among other things, the industry is instructed to "handle fruit like eggs" and to "discard all injured, bruised or fallen" fruit; and "unless blue mold is controlled the prospects of Western Australia as a citrus exporting State are not at all promising" (p. 1219). The problem seems to have been about the same on the other side of the world, and the known remedies also.

Even as late as 1924 we find a text book, "American Fruits" (Vol. II, 1219) still talking along the same old lines of careful handling, and *only* that, for control of blue mold decay (p. 1222).

Likewise, in January, 1924, the Field Department of the California Fruit Growers Exchange sent out its Circular No. 104, and another one in April, 1924, No. 107 (Vol. II,

1333, 1337) with the usual instructions about handling the fruit *very carefully* because of its tender condition and picking out all fruit showing signs of blue mold so that infection of the wash water and machinery may be minimized. And (p. 1335) "this blue mold passes through the water tank and all the machinery and *no amount of care will prevent* a certain amount of inoculation in case there is any injured fruit."

The foregoing, as to the long felt want and continued search throughout many years for a satisfactory solution of the blue mold decay problem confronting packers and shippers of fresh fruit, is fully substantiated by the testimony of numerous packers and shippers of citrus fruit and other representative men connected with the practical industry.

These men testified to the continuing acuteness of the blue mold decay problem down to 1923-24, notwithstanding the extensive investigations made year after year by Department of Agriculture experts in the attempt to solve that problem, and notwithstanding the efforts of the industry to live up to the high standards of "careful handling" recommended by the experts. Some of these witnesses had had personal contact with this work of the Department of Agriculture, when it began many years ago (Knox, Vol. I, 33; Wolstencroft, p. 42; McIntyre, p. 317). They stated that it was the function of such organizations as the great California Fruit Growers Exchange to assist packers and growers to the fullest extent by disseminating information about methods, through circulars and otherwise, with a view to improving methods in every way possible (Knox, p. 33; Wolstencroft, p. 48; Jacobs, pp. 54-5).

In spite of the constant dissemination, throughout many years, of all knowledge supposed to be helpful to the industry, losses, due to blue mold decay, continued to amount to between one and two million dollars a year (Knox, Vol. I, 25). Careful handling undoubtedly reduced decay, but did not sufficiently prevent it. Notwithstanding the earnest efforts of the industry, it was by no means the happy solution of the

problem that petitioner's brief (*e. g.*, pp. 16, 73) might lead one to suppose (Knox, Vol. I, 26; Jacobs, p. 55; L. B. Skinner, p. 67; Cartwright, p. 75; Vol. II, 810-11, 953, 1058, 1066). The "careful pick and pack" pointed to by petitioner (brief, p. 78) in support of its contention, and contrasted by petitioner itself with "commercial (*i. e.*, practical) pick and pack", was theoretically the complete answer, but practically unattainable (pp. 13, 15, *supra*, and Vol. II, 1058, 1066). "If we followed the recommendations of the Department we could not have operated" (Chase, Vol. I, 62).

The use of borax to decrease blue mold decay was never even suggested prior to the work resulting in the patent in suit (Knox, Vol. I, 27; Wolstencroft, Vol. I, 55; Jacobs, Vol. I, 70). But this was not because the industry was satisfied with the results of "careful handling". Other means were tried—and abandoned because unsuccessful.

Chemicals such as bluestone (copper sulphate) and permanganate of potash were tried, in the vain hope of stopping blue mold decay (L. B. Skinner, pp. 67, 72, 309; Hendrix, p. 80; McIntyre, pp. 315-6; B. C. Skinner, 320-321), and Gold Dust and other washing powders (Wolstencroft, Vol. I, p. 61). So eager were the packers to get some relief that, when the Brogdex (paraffin) treatment made its appearance in its original crude form, before respondent had developed the borax treatment, a number of them experimented with the paraffin alone, because it was thought it might help to reduce decay. Indeed, some were so much interested that they advanced money to help develop the treatment. But the results with the paraffin *alone* were disappointing on the whole (Knox, pp. 27, 34-36, 38; Wolstencroft, pp. 48-9; Jacobs, p. 57; L. B. Skinner, pp. 68-9; Earley, p. 89).

And Hart, an old time grower and packer in Florida, who had missed but three meetings of the Florida Horticultural Society in the nearly forty years of its existence, and who had been either secretary or treasurer of the Society for thirty-two years (pp. 538, 540), testified (p. 533) that, although in his own practice he was able to get along with plain water, he recalled a good deal of talk about putting

chemicals in the wash water, but the objection was that all those tried ate up the metal tank linings (strong chemicals, those!). Hart also testified (p. 545) that the subject had been discussed several times at the conventions (the Horticultural Society had an annual convention, p. 549); and

> "I remember that the fault with them was that they had a chemical action upon the linings of the tanks, and for that reason, and the failure to bring the results that were hoped for, they were all abandoned. Those tanks are metal-lined with galvanized iron."

Wolstencroft (pp. 44-5) tells of how, in fulfillment of its function and keenly alive to the necessity of finding something to solve this old problem of blue mold decay, the California Fruit Growers Exchange promptly had its field department thoroughly investigate the borax treatment as soon as respondent started to introduce it; and Wolstencroft identifies Respondent's Exhibit 61, a circular letter of the California Fruit Growers Exchange "To all Shippers", dated June 20, 1924, signed by its general manager Dezell, as embodying results of tests which he personally saw carried out in that elaborate investigation.

Chase, of Florida, tells (pp. 61-63) of knowing Ramsey in connection with the Department of Agriculture's work, and of the recommendations for careful handling which, however, he (Chase) found did not solve the problem. But when he received a Department of Agriculture bulletin in the fall of 1924 recommending treatment with borax to prevent blue mold decay, he immediately decided to "experiment" with it, and he obtained marked reduction in decay. Likewise, L. B. Skinner, president of the Florida State Horticultural Society, says (pp. 67-68) he knew Ramsey and Fulton of the Department of Agriculture, and discussed the blue mold decay problem with them for years prior to 1923, for his decay losses were heavy in spite of all he could do; that late in 1924, his friend Chase wrote him about the borax treatment; and that Fulton also wrote him about it and even came to his office to discuss it. As a consequence, Skinner promptly tried it and,

especially, with a warm solution, "we had perfectly wonderful results" (p. 71). It was a new idea and gave new and unexpected results.

In spite of the evidence reviewed above, petitioner's brief asserts (p. 74) that there was no long-felt need and no search for a remedy.

The evidence, however, clearly shows that blue mold decay presented a constant "problem"; that "careful handling" did not solve it; that chemicals were unsuccessfully tried, and that the patentees of the patent in suit were the first to discover how to combat the decay problem successfully. That was done by the use of borax properly applied and left in place on the fruit, as we point out later.

That this was, in fact, something entirely new in the industry is also emphasized by the fact that only after the introduction of the process of the patent in suit did the borax manufacturers find that there was a field for their product in the citrus industry (Austin, Vol. I, 90)—a field created by the patent in suit.

The decisions of the lower courts aptly summarize the settled beliefs and teaching of the art down to the time of the invention in suit. Thus, the District Court said (Vol. I, 18):

> "The decay directly attributable to blue mold amounted in some cases to as much as 30 or 40 per cent. of the shipments. The resulting losses were enormous. Time and time again the shippers in their distress turned to the Department of Agriculture but to their inquiry the uniform answer throughout the years, until the invention of Brogden & Trowbridge, was the despairing one that nothing could be found that could be put into the wash that was effective against blue mold, that 'the only thing to do is to keep the fruit free from injuries'. * * * the Department reported to the growers from time to time that it had experimented with the use of antiseptics, disinfectants and fungicides in the wash and that it had not obtained any results that were worth noting."

The Court of Appeals said (pp. 571-2, 574):

"The ravages of blue mold decay result in enormous losses to fruit growers and packers, and for years strenuous efforts had been made to overcome or reduce blue mold decay and to prevent this loss. These efforts were elaborate and organized and carried on with great care and energy, but the problem remained unsolved until the patent of Brogden and Trowbridge. Up to the time of this patent the teaching of the industry was that the only practical way to prevent blue mold decay was by extremely careful handling, so as to avoid the slightest surface injury, and by refrigeration."

* * * * * * *

"There is no question about the need of some kind of inhibiting agent to prevent blue mold decay nor about the search of the industry for it. From 1902 to the invention in 1923 the entire industry engaged in growing, packing and selling citrus fruit, departments of agriculture of states and the federal government, together with such eminent horticulturists and pomologists as Powell, Hart, Tenny, Woodworth, Dyer, Fawcett, McKay, Skinner, Sadler, Ramsey, Mann, Holton, Stubenrauch and others were earnestly and laboriously in a concerted and continuous effort studying the problem of finding something to prevent blue mold decay. Concentrated study and continuous cooperation among growers, packers, dealers and scientific men who investigated the subject resulted in the conclusion that the only way to stop or minimize blue mold decay was to prevent injury to the fruit by careful handling and by refrigeration. The opinion was practically unanimous that chemical treatment was not helpful but harmful."

Then came the announcement of the invention of the patent in suit, which completely changed expert thought and commercial practice.

The invention of the patent in suit:

Two "outsiders", Brogden and Trowbridge, the patentees of the patent in suit, disregarded the teachings of the prior art and proceeded along radically new lines and ideas.

They recognized (patent in suit, Vol. I, 586, line 15 to p. 587, line 8) that surface injury of the fruit was inevitable in commercial large-scale gathering, packing and transportation; that blue mold spores would necessarily enter these wounds, and that these spores could not be killed by chemicals. But they then conceived that those *spores could be rndered harmless by preventing their development or growth.* Thus, the patent states (p. 586, line 10):

> "This invention relates to art of preparing fresh fruit for market; and in particular it relates to processes for the treatment of citrus and other fruits in such manner that *the development of molds* and the like upon the fruit, and especially the development of blue mold and infection by blue mold spores, *is prevented or arrested* either wholly or to such large extent as greatly to prolong the marketable life of the fruit beyond what has been possible heretofore."

And (p. 589, lines 1-10) these patentees:

> "discovered that *by proper treatment of* the fruit in the packing house it is possible to greatly reduce, and often to absolutely *prevent, the growth or development* of blue mold on fruit for long periods of time, and thus to materially lessen or even eliminate the heretofore unavoidable losses from decay. Moreover, it is possible to achieve these results without upsetting or greatly changing present practice so far as concerns the mechanical handling of fruit in packing houses of the modern type."

The patentees point out that their process is applicable to protect fruit against blue mold and "all *kindred* rot and decay organisms and diseases * * *" (Vol. I, 597), *not* to "*all* diseases and decay producing organisms to which fruits may be susceptible", as erroneously stated on pages 4-5 of petitioner's brief (see also pages 10 and 42). No assertion is made that the process will stop decay or disease which originates *internally.*

These patentees proposed to *treat the fruit chemically* before it is packed—not to kill the spores, but to inhibit

their growth by using borax, a mild and harmless chemical. That is, (p. 589, lines 20-38):

> "In general, the process of the invention involves applying to the fruit *a mold-inhibiting reagent* comprising the boric acid radical, said compound being most desirably alkaline in reaction, and being employed in concentration effective to *render the surface of the fruit unfavorable as a medium for blue mold development.* Ordinary borax ($Na_2B_4O_7 + 10H_2O$) has been found, after extensive investigation, to be especially potent in its retarding and inhibiting action in this connection, and this substance is considered at present to be the most desirable to employ in practicing the invention. A water solution of borax is alkaline in reaction, but is without corrosive or other deteriorating action upon fruit to which it is applied. Boric acid is not so effective as a mold-retarder as is borax; but compounds of boron, whether acid or alkaline, appear to have a specific *inhibiting action* upon blue mold; and hence it is not desired to limit the invention, so far as concerns compounds of boron, to the employment of an alkaline treating solution."

The patent, it should be noted, is *not* a mere "patent on borax"; nor is it a patent for treating fruit with borax without any qualification or limitation as to the character and conditions of use. It is possible, for example, to use borax as a water softener to assist in cleansing the fruit without necessarily having the borax exert any noticeable mold-inhibiting action. When borax acts to soften water for washing purposes, it thereby assumes a substantially insoluble state and its power to prevent decay becomes practically negligible (Petitioner's expert, Alsberg, Vol. I, 305-7).

The patent covers something very different from this. The patent recognizes that under modern commercial harvesting and packing house conditions, *surface injury of a substantial proportion of the fruit handled is an absolutely unavoidable incident,* and it provides for the application of borax to fruit *thus commercially handled* but under such conditions as to ensure *impregnation of the exposed rind tis-*

sues (*i. e.*, tissues exposed through mechanical injury, however slight) *with an amount of borax, as such, adequate to inhibit mold growth and to prevent spore development;* and to *leave in these tissues* and on the surface of the fruit generally *such a residue of borax as will render the fruit effectively resistant to blue mold decay* (p. 592, last line to p. 593, line 11). As the Court of Appeals said (p. 573):

> "The invention deals with a problem peculiar to commercial large-scale methods of handling fruit."

The conditions of borax application, namely, the concentration of the solution, the length of time the fruit remains wet therewith, the temperature of the solution, and the method of handling the fruit after application of the solution thereto,—all are important. Each of them may be varied widely within practical limits, but all must be properly coordinated or correlated in order to ensure producing the effects above set out. Proper fluidity is another important point. As the patent specification states (p. 591, lines 18-21):

> "The solution should not contain ingredients substantially diminishing its fluidity or otherwise interfering with ready penetration of the solution into exposed rind or skin tissues."

For example, the solution should not contain ingredients rendering it substantially viscous, nor should any of the ingredients so act upon the rind of the fruit as to impede ready entry of the borax solution into surface wounds and porosities.

Accordingly the patent proceeds to describe in some detail (pp. 589-597) how the borax treatment of the invention can be practiced to best advantage; but the permissibility of varying the specific details of procedure there set out is fully recognized and repeatedly stressed.

In the concrete example described, the fruit in an unwashed condition, just as it is received at the packing house from the groves, is first placed in a soaking tank 11 contain-

ing a strong solution of borax maintained at around 115° to 120° F. The fruit floats gradually to the other end of this soaking tank to an elevator 14 which removes it from the tank and delivers it over a chute board 15 to a rotary brush-roll washer 17. In the soaking tank the fruit becomes thoroughly wet with the borax solution; and dirt and other foreign matter on the surface is loosened to a considerable extent. The rotary brush-rolls of the washer 17 now rub the fruit vigorously while warm borax solution is sprayed on the fruit as it travels toward the lower end of the brush rolls. In this way, the fruit is thoroughly cleansed and, at the same time, opportunity is given for the borax solution to penetrate into and impregnate exposed rind tissues and surface porosities. From the washer the fruit, still wet with borax solution, is conveyed to a drier 27 in which surface moisture is removed. Leaving the drier over chute board 28, the fruit then passes to rotary brush-roll polishers 29, 31, arranged in series. The polisher 29 brushes off any large excess of whitish borax residue that is unnecessary to proper protection of the fruit and that might render the appearance of the fruit undesirable from the standpoint of the buyer.*

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* In passing over the second polisher 31, the fruit may receive an application of a very small quantity of a mixture of paraffin with a highly refined light oil, which is "spread *in an extremely thin film* over the surface of the fruit by the action of the brush rolls",—a film so thin that it is not air-excluding, although it does much to diminish loss of moisture through the rind. As the patent specification points out, the application of this thin film-like coating of paraffin is *optional* but has the effect of greatly retarding the natural withering of the fruit and of helping to maintain the fruit in a plump and fresh condition. The defendant, although applying a little solid paraffin to its borax-treated fruit, does not apply it in such a way as to get a continuous film coating. Because of the poor and imperfect way in which the defendant applies paraffin, and its failure to get the result which this step is intended to produce when used as a part of the patented process, plaintiff is not relying here upon any of the claims which include the application of a waxy material to the fruit.

It will be noted that the specification states (p. 591, lines 16-18) that it is *desirable* that the treating solution contain at least 2 per cent. of borax and, as the record herein shows, it is undoubtedly best practice to use a solution at least as strong as this. However, the employment of less than 2 per cent. of borax is in no sense excluded by the patentees, provided the percentage is not so small as to be useless, and provided the conditions of operation, other than concentration, are so co-ordinated therewith as to ensure effective impregnation of exposed rind tissues and other surface porosities and to attain a distinct mold-inhibiting effect. Thus the specification states (p. 597, lines 6-10):

> "Where a warm treating solution is used, it is usually sufficient for the fruit to remain two or three minutes in the soaking tank before it goes through the washer; but where cooler and less concentrated solutions are used, a longer soaking period is advantageous."

Similarly, instead of removing the unnecessary excess of borax by dry-brushing the fruit after it has been passed through the drier, it is feasible to give the fruit a light rinse with plain water after the borax solution has been applied and just before the fruit enters the drier. This method is the one commonly used by plaintiff's California licensees (Vol. I, 37, 56).

It is to be particularly noted that the *light rinsing* of the fruit, which does not occur *until after the fruit leaves the washing machine* (p. 592, fol. 6) and serves merely to remove the unnecessary excess of borax, is in no way comparable with or equivalent to a *washing* (cleansing) of fruit with plain water on washer brushes, which was the standard prior practice.

> "Water in the soaking tank should be frequently changed, and sprays of fresh water should be directed against the fruit as it passes through the washing machine."
>
> (U. S. Dept. Agric. Bull. 63, Vol. II, 1050.)

The rubbing and scrubbing with an abundance of plain water incidental to such a washing operation, if applied to fruit previously washed with borax, would have the effect of removing most of the borax from the fruit rind (including previously impregnated exposed rind tissues) and rendering it non-resistant to blue mold decay, especially if the previously applied borax solution were not very strong and the fruit had not been soaked in it for a relatively long time.

From the foregoing, it will readily be seen that the statement in petitioner's brief (pp. 3-4) that

> "the prime question here for review is whether or not it is lawful for an unlicensed person to wash, dip or soak any fruit or vegetable in water containing any substantial amount of borax"

involves an entire misconception of the matter; and, further that petitioner's definition of respondents' process (brief, p. 19) is incomplete, erroneous, and highly misleading.

The quoted statement reads as though it were still thought that all that is necessary is to kill whatever blue mold spores may be on the fruit; and that, in the process of the patent in suit, borax does this, and, having done this, has performed its function. But that is a mistaken viewpoint. That is, the borax is not a germicide or killing agent for blue mold spores. It has no such power. Nor is it merely a water-softener acting to facilitate cleansing and thereby being consumed or washed off the fruit with the dirt. On the contrary the borax as such, over and above what may be eliminated from the solution through water-softening action, is applied to the surface of the fruit in mold-inhibiting concentration and is deliberately *left there* to inhibit the growth of blue mold spores which may be on or may *subsequently reach* the fruit. The borax continues its protective action long after the fruit is dipped or soaked in it; it is to impregnate the wounds in the fruit and remain there.

The viewpoint expressed by petitioner utterly ignores these and other fundamental considerations upon which the invention in suit is based, including (1) the fact that the fruit to be treated is *fresh* fruit undergoing preparation for marketing *as such;* (2) the fact that the fruit to be treated is not specially selected fruit free from blemish, but is "run-of-mine" fruit which is being prepared and packed under the severe conditions unavoidably characterizing modern large-scale rapid mechanical handling, with the result that in any given lot or body of fruit thus handled the majority of the individual fruits are always surface-injured to some extent, however imperceptibly and are therefore subject to attack by the omnipresent blue mold spores at these points where the rind tissues are exposed; (3) the fact that these exposed rind tissues must be thoroughly *impregnated* with a borax solution of adequate strength; (4) that a substantial, even though small residue of borax must be left on the surface of the fruit, particularly in the exposed rind tissues; and (5) the fact that all this must be accomplished without affecting the freshness and edibility of the fruit or rendering it unsightly and commercially undesirable. It is easy to say that this is merely dipping fruit in a solution of borax, but we submit that the record here shows such a statement to be utterly superficial and misdescriptive.

Moreover, petitioner's evident contention that borax and boric acid stand on a par and are equivalents for the purposes of the invention in suit is contrary to facts established by the record and is misleading. While the invention in its greatest breadth, and as defined by claims 1, 16, 23 and 25 of the patent, properly comprises the use of either borax or boric acid, the patentees found that in actual practice, under the conditions obtaining in the packing house, boric acid is less effective than borax, and they emphasized this fact in their specification (Vol. I, 589, line 33). With the exception of the claims just mentioned above, all the claims here in issue are directed specifically to the use of borax. That borax is superior in this connection was later strikingly confirmed by Fulton and Bowman of the Department of

Agriculture, the results of whose tests, published in 1924 in the Journal of Agricultural Research (Vol. II, pp. 1226-7), showed borax materially more effective than boric acid. Petitioners' expert, Alsberg, on direct-examination (Vol. I, p. 274), testified that boric acid should be the more effective, and was quite unable to explain, on cross-examination (pp. 299-300), why the contrary is true in the specific field of treating fruit. To him, this was something unexpected.

The claims relied upon (Vol. I, 597) are those numbered 1 to 7 inclusive, 9, 14, 15 to 18 inclusive, and 23 to 26 inclusive.

All of these claims except 23 to 26 inclusive are directed to the *process*. Claims 23 to 26 are for the resultant treated fruit, as a new article of manufacture.

Of the process claims, claim 3 is typical, and is as follows:

> "3. In the preparation of fresh fruit for market, the process which comprises subjecting fruit to the action of an aqueous solution of borax, *the fluidity, strength and temperature of the treating solution, and the duration of the treatment, being such that exposed rind or skin tissues of the fruit are effectively impregnated* with borax *and rendered resistant* to blue mold decay, while at the same time the fruit is not scalded nor is its freshness or edibility otherwise substantially impaired."

The article claims relied upon, 23 to 26, define the borated fruit resulting from the process. Claim 24 is as follows:

> "24. Fresh fruit of which the rind or skin carries borax in amount that is very small but sufficient to render the fruit resistant to blue mold decay."

The product claims define essentially an article of manufacture, since the article is not a natural product but the result of a process by which a natural product is endowed with the characteristic property of being resistant to blue-mold decay which it would not otherwise possess. The article is a combination of a natural product, fresh fruit, with a boric compound applied to and carried by the rind or skin

in an amount which is small but sufficient to render the fruit resistant to decay. The complete article is not found in nature. It is produced by a manufacturing operation. It is therefore an article of manufacture (see pp. 60-64, *infra*).

The effect of the invention upon the industry and upon expert thought:

We have already (pp. 6-24, *supra*) reviewed the insistent teaching of the art during the twenty or more years prior to the time when the invention of the patent in suit was brought to the notice of the public,—that teaching which led directly away from anything like the borax treatment.

In the fall of 1923 and early in 1924, the plaintiff made public demonstrations of its process in California, these demonstrations being witnessed by experts of the Department of Agriculture and others interested in the fruit industry in California (Vol. I, 43-5, 48-9; Vol. II, 1317-8). The plaintiff's trade name for the borax treatment of the patent in suit was "Brogdite", and its name for the subsequent paraffin treatment was "Brogdex" (Vol. I, 26-7).

Beginning immediately after these demonstrations by the plaintiff, there is a sudden and remarkable change in the work and in the voluminous writings of experts on blue mold decay. All at once the Department of Agriculture experts and the fruit exchanges of California and Florida issue bulletins and circulars about a new way of stopping blue mold which is proving highly effective. From now on the borax treatment stands out as a matter of absorbing interest and extreme importance to the entire industry, though never before thought of.

The first example of this sudden change is a circular letter of June 20, 1924, addressed "To all Shippers" from the office of the California Fruit Growers Exchange by Dezell, its General Manager, this circular letter being accompanied by a "Report of Brogdite and Brogdex Tests made by the Field Department of the California Fruit Growers Exchange,

Navel Orange Season 1923-24" (Vol. II, 1312) and sent out by that Field Department (Vol. I, 44-5). In the letter, Dezell says that Brogdite (the trade name for the borax treatment of the patent in suit) was tested to determine its effectiveness in controlling blue mold decay; and (p. 1312):

> "Until very recently, the only practical method of controlling blue mold decay has been by preventing mechanical injuries to the fruit through the most careful handling in both field and packing houses. *Efforts have for years been made by scientists and others to find something that will kill the blue mold fungus and spores but which would not injure the fruit.* While a number of substances have been found that will kill both the blue mold fungus and spores, they either injure the fruit, are too expensive or impractical of application, or are dangerous because of their poisonous properties."

The letter then points out that the method of testing employed was intentionally about as severe as could be devised and that (p. 1313):

> "The great bulk of our blue mold decay is caused by mechanical injuries to the fruit before it is packed and these experiments indicate that *Brogdite properly applied to fruit mechanically injured will control the development of blue mold decay from that cause.* Some of these experiments showed that when blue mold had developed to spots as large as a dime the treatment *stopped its further growth.*"

The seven-page report accompanying Dezell's letter shows the large number and variety of tests of the Brogdite treatment particularly and is clear evidence of the extreme interest it had for the Exchange Field Department. And the fact that elaborate tests and experiments were made, is clear evidence that the California Fruit Growers Exchange, which had been for years in close touch with everything going on in the industry and very active in cooperating with the Department of Agriculture in disseminating information which would in any way help the growers and shippers to cut down decay losses, had had no idea that blue mold growth could be prevented by this use of borax.

On October 17, 1924, less than four months after Dezell reported on the investigation of the Brogdite treatment by the Exchange Field Department in California, the Florida Citrus Exchange sent out a Bulletin (Vol. II, 1242; see also Stipulation, p. 1241-2, and compare Def.'s Ex. 3, p. 1458), "To all Sub-exchange and Association Managers", in which attention is invited to a letter dated October 14, 1924, said to have been received from Fulton of the Bureau of Plant Industry, U. S. Department of Agriculture, and reading as follows:

> "The experiments that we have been conducting for the past eight months show that blue mold rot can be reduced about one-half by dipping citrus fruits in a 5% borax solution at ordinary temperatures. If the temperature of the borax bath is raised to between 115 degrees and 120 degrees F (which temperature oranges and grapefruit stand without injury) and the soaking is prolonged to five minutes, 90% of the blue mold rot is prevented under conditions extremely favorable for its development.
>
> "The borax treatment also reduces stem end rot 50%, and possibly more.
>
> "A publication giving the detailed results has been delayed in press. This advance announcement is made so that Florida shippers may consider the question of trying out the treatment early in the shipping season. Please let us know about any points on which you may wish further information. The matter is still in the experimental stage but is at a point where commercial trial seems justified.
>
> "It is requested that the matter be kept from the press for the present, until publication can be made of the evidence on which the conclusions are based."

It is interesting to note the phrase "experiments that we have been conducting for the past *eight months*"; also *"the matter is still in the experimental stage."* Eight months back of October 14, 1924 brings the commencement of Fulton's experiments to February, 1924, some weeks after plaintiff had begun large-scale commercial use of the borax treatment at Walnut, California, which was witnessed by Barger,

an employee of the same bureau (Plant Industry) of the Department of Agriculture as Fulton (Vol. I, 247-8; 249; x-Q. 164; 250; x-Qs. 173-6). By his own admission, Barger had also seen and actually participated in the earlier semi-commercial tests of plaintiff's process at Strathmore, California, in the latter part of 1923, and had spoken about them at the time to his superior (Hawkins) in the Department (Vol. I, 238, last paragraph; pp. 241-5).

This bulletin was followed on October 28, 1914 (p. 1245) by another quoting a second letter from Fulton giving further details of the borax treatment.

Further bulletins of the Florida Citrus Exchange were issued November 17 and December 23, 1924, and January 13, 1925. One such Bulletin states (Vol. II, 1244):

> "It is believed that within the next thirty days there will be interesting developments that will be helpful to Associations in determining the best methods to employ, should they wish to adopt a system of protection. As soon as possible details of these tests will be compiled and issued from this office in Bulletin form."

The other two bulletins relate to test car shipments of oranges treated with borax, the results being extremely gratifying (pp. 1244, 1247).

In the meantime, the defendant, also, was busy spreading information as to the borax treatment among its member managers in bulletins which show that defendant, as well as the Florida Citrus Exchange, received frequent letters from Fulton of the Department of Agriculture, one of which was identical with that circularized by the Florida Citrus Exchange and quoted above (Vol. II, 1458-61). One of defendant's bulletins concluded with the recommendation, "It might be well for you to try this out on some questionable fruit." A letter from Fulton, quoted in defendant's bulletin of November 22, 1924 (p. 1459), says:

> "Probably you have read the article in the November 1st number of the Florida Grower on the borax treat-

ment of citrus fruit to prevent rot. Since this was written we have gotten results from additional tests that are even more promising."

On December 3, 1924, defendant sent out another bulletin on the borax treatment, and still another on December 15th, both quoting additional letters from the Department of Agriculture (pp. 1460-61). In the circular of December 3rd, Fulton is quoted as saying:

> "Only a trace of blue mold showed up in the above tests. Practically all of the rot was stem end rot. It is a striking showing of the effectiveness of the borax treatment in the control of this rot."

This does not sound like a discussion of something that the art had known for years.

Returning now to California, we find General Manager Dezell of the California Fruit Growers Exchange sending out a bulletin "To All Shippers" on December 19, 1924 (Vol. II, 1307), in which it is said:

> "At our Directors' meeting on December 10th, a representative of the U. S. Department of Agriculture presented the results of experiments that have been conducted by the Department in the treatment of citrus fruit for control of decay from blue and green molds."

That representative was Barger, as he finally admitted under cross-examination as defendant's witness (Vol. I, p. 259, x-Qs. 288-292). After having seen the treatment of fruit by the process of the patent in suit, it turns out that Barger, assisted by the Field Department of the California Fruit Growers Exchange, then proceeded to carry out extensive tests with the borax treatment, the results of which are set forth in this Exchange circular of December 19, 1924. This work was done by Barger in company with Nelson who had been closely associated with Brogden in the plaintiff's demonstration in the Fall of 1923 (Vol. I, 251-2, Barger x-Qs. 188-206) and was also conversant with the com-

mercial operation of the process at the Walnut Packing House beginning in January, 1924 (Vol. I, 247, Barger x-Qs. 130-136).

In the meantime, sudden activity was being manifested in the Government publications and trade journals about this borax treatment for controlling blue mold decay. The first of these publications seems to have been in the Journal of Agricultural Research (a U. S. Department of Agriculture publication) for May 31, 1924, the actual issue date having been November 1, 1924 (Vol. II, 1225). That was an article by Fulton, Pathologist, and Bowman, Junior Pathologist, of the Bureau of Plant Industry, on "Preliminary Results with the Borax Treatment of Citrus Fruits for the Prevention of Blue Mold Rot"; and, as we have seen, the work was begun in February, 1924, a month or so after Barger had witnessed a commercial demonstration of plaintiff's process (p. 36, *supra*).

This article begins with a statement that the senior author (Fulton) has made recent studies on "the effect of *ultra violet light* in disinfecting the surfaces of citrus fruits, details of which will be published in the near future * * *." But it had proved a failure, so the authors go on to say in their article that they

> "have undertaken the testing of a large number of mild chemical reagents with *a view to finding inhibiting rather than killing substances*. The stronger disinfectants would be objectionable, because their poisonous character would not permit residues to be left, and because many of them would actually injure the surface of the fruit if not immediately washed off."

Finally, after extensive experimenting, they find that borax is the thing to use, as Brogden and Trowbridge had already found. The article further states (Vol. II, 1234):

> "Practical packing house tests will be required to determine the most effective and economical way of applying the borax treatment. From these preliminary

laboratory tests it seems that the treatment would be about equally effective in any one of the several methods of application discussed".

Observe again the attitude that this is a new field requiring careful investigation before definite conclusions can be drawn. Evidently the Department, during all the twenty years of investigations in Florida and California by its corps of experts, had never run across anything like this.

The authors discuss the use of borax from the standpoint of the Pure Food Act. They point out (p. 1235) that the borax is applied only to the outside of the peel,

"a portion of the fruit that is not regarded as edible and that is discarded in the ordinary consumption of the fruit."

The authors also note that borax is not a poison and that a treated orange would not carry more than one-thirtieth of the therapeutic dose of borax. In other words, one would would have to eat thirty oranges, peel and all, in order to consume in this way an amount equivalent to the allowable therapeutic dose. It is stated that chemical analyses are being made to determine the amount of borax on and in the peel of oranges and lemons treated with borax solution and that the preliminary indications are that the amounts present are still smaller than those assumed in the foregoing discussion. Evidently that turned out to be the case.

On November 1, 1924, there also appeared in the Florida Grower an article by Fulton and Winston of the Bureau of Plant Industry, Orlando, Florida, on "Controlling Blue Mold Rot of Citrus Fruits with Borax Solution" (Vol. II, p. 1238), evidently as a continuation of the work reported in the article in the Journal of Agricultural Research, actually published on the same day. Still the subject is such a new one, that the Department experts tell the industry to proceed with caution. They say (p. 1239):

"The findings from the experimental test *would appear to warrant commercial shipping tests.* Details of

applying must be worked out in each packing house to meet the conditions existing there. A treatment with 5 per cent. solution for 5 minutes at 120° F is desirable from the standpoint of effectiveness. * * * If kept reasonably clean, the borax solution ought to last several days without changing, probably as long as a week. * * *"

In the Citrus Industry for February, 1925, page 44 (Vol. II, 1250), appears an article by another Department expert, Yothers, Associate Entomologist, also of Orlando, Florida, in which he reports the result of using hot and cold borax solution on scale insects infesting citrus fruits. The interesting point in this article is the following remark by Yothers:

"It has been found by other investigators that blue mold of citrus is practically prevented by soaking the fruit in a 5 per cent. solution of borax heated to 120° F. for five minutes. From the standpoint of the citrus industry, *this is a most remarkable and marvelous accomplishment.*"

In the California Citrograph for March, 1925, appears an article by Barger of the Bureau of Plant Industry, on "Treating Oranges with Borax Solution for Control of Blue and Green Mold" (Vol. II, 1251; also Vol. I, 250, x-Q. 167). In this article, Barger discusses the results of the experiments which he made in 1924 and which included the work upon which he reported on December 10, 1924, to the Directors of the California Fruit Growers Exchange (p. 38, *supra*). He says (p. 1254):

"Much less decay is shown in the lots of fruit soaked in 110 degree solution for six minutes as compared with the shorter periods of time and lower temperature.

"In addition to these experiments, experimental shipments were made with the commercial run of fruit. Fruit from the same grove was taken, part of which was washed in water only and part was soaked in borax solution. This fruit was treated for about five minutes with concentrations of borax ranging from 2½% to 6%.

> On arrival at the market these shipments showed an average of five times as much decay in the untreated as was found in the treated fruit, and approximately the same proportional difference in decay was obtained after ten and 21 days in lots held at the market. The appearance of the fruit was not injured by the treatment."

Commercial car shipments of treated fruit showed similar satisfactory results, according to Barger, and he concludes his article with the statement:

> "After considering the experimental data and the data obtained from the commercial shipments, *there seems to be no question but that blue or green mold decay can be controlled by soaking oranges in 7% borax solution at 110 degrees for five minutes.*"

That is to say, for the *best* results, where blue mold decay is practically eliminated, Barger recommends practically the precise conditions which are recommended as most desirable in the disclosure of the patent in suit.

Closely following this published article by Barger, Fulton of the Bureau of Plant Industry, addressed the Florida State Horticultural Society at its 1925 meeting (Vol. II, 1256). In this talk on "The Borax Treatment of Citrus Fruit For Prevention of Decay", Fulton outlines briefly the methods of control or attempted control that had been in vogue for years past, and he then says (p. 1257):

> *"For a long time fruitless search has been made for a satisfactory chemical agent that will control these rots."*

That is interesting. It confirms what Fulton's predecessors, including Powell and Ramsey, had been saying all along. In the next sentence, Fulton begins to lead up to the real point of his whole address, namely, this new borax treatment which everybody is now talking about, and his carefully chosen words seem to be intended to convey the impression that this

important advance in the art is to be credited to the Department of Agriculture. He says:

> "For several years the U. S. Bureau of Plant Industry has been investigating blue mold control by fungicides, *following a different line of attack* from those previously used."

Note the indefinite "several years" and compare this with the reference to work in March, 1924, contained in the Fulton and Bowman article in the Journal of Agricultural Research (Vol. II, 1226) and Fulton's letter of October 14, 1924, to the Florida Citrus Exchange (Vol. II, 1242) in which he refers to experiments that the Department has been carrying on "for the past eight months" (p. 36, *supra*). Fulton recommends a 5 per cent. solution of borax, the *leaving of a certain amount of borax residue on the fruit,* and points out that *subsequent brushing of the surface-dry fruit as in packing house polishing does not materially lessen the effectiveness.* And (p. 1257):

> "*A very fortunate and entirely unexpected development* in the testing of the borax treatment is its very high effectiveness against both types of stem-end rot, after either hot or cold applications."

This article is, throughout, a wholehearted recommendation of the borax treatment, whether the borax solution be applied cold or warm. With cold solution something better than 50 per cent. of blue mold decay and almost 75 per cent. of stem-end rot are prevented over a two or three weeks marketing period; while the hot treatment increases the effectiveness to over 90 per cent. for blue mold rot and about 80 per cent. for both forms of stem-end rot (Vol. II, 1257-1259).

The borax treatment finally got into the standard text books. The 1926 edition of Hume's "The Cultivation of Citrus Fruit" (Vol. II, 1281), in discussing blue mold decay, relates how during the last quarter of a century or more attempts had been made to reduce decay, including

plans for using solutions of copper sulphate, iron sulphate, permanganate of potash, formalin and potassium alum, but the results had not been particularly satisfactory. It is stated (p. 1283) that

> "More recently, Barger and Hawkins have secured results which indicate that blue-mold may be controlled largely and economically by immersing citrus fruits in a 2.5 per cent. borax solution before packing. Further experiments *may* justify the use of borax in a large way."

A footnote refers to the Barger and Hawkins article in Journal of Agricultural Research (Vol. II, 1265). From it, Hume might naturally infer that Barger and Hawkins admitted responsibility for the borax treatment. It will be recalled that Hawkins was the superior to whom Barger spoke regarding plaintiff's 1923 tests at Strathmore in which Barger personally took part (p. 37, *supra*).

Note, however, that it strikes Hume as a novel proposal.

Also, the introduction of the borax treatment into the industry through the invention of Brogden and Trowbridge induced sudden activity in the patent literature.

The employees of the Department of Agriculture in particular were stirred to file a number of applications for processes of and apparatus for use in the prevention of decay in fresh fruits. Thus, within a period of less than a year beginning with October 20, 1925, there were granted to employees of the Department of Agriculture seven patents of this general character (Vol. II, 1284-1307). Of these, four related to the use of borax. The other three proposed the use of other reagents such as certain lithium compounds and are of no special bearing here except as indicating the general activity into which the Department workers appear to have been galvanized by the success of the process covered by the patent in suit. With a single exception every one of these seven patents was applied for after the grant of the patent in suit. The single exception is the patent to Bar-

ger, Hukill and Hawkins 1,559,733 which was *applied for* February 21, 1925, a little over two weeks before the patent in suit *issued*.

In discussing the effect produced on the industry and expert thought by the invention of the patent in suit, the District Court said (Vol. I, 17):

> "To eliminate the loss arising directly from the exclusion of the injured orange and the far greater indirect loss from its inclusion, inadvertent or otherwise, in the shipment, a remedy supplementing careful handling was long desired and greatly needed. Brogden and Trowbridge were the first to supply it."

The Court of Appeals said (pp. 573, 575):

> "The processes of this patent satisfactorily demonstrate that blue mold decay can be arrested, the fruit rendered immune to attack by blue mold spores and its marketable life extended far beyond that of untreated fruit, without affecting the freshness and flavor of the fruit.
>
> * * * * * * *
>
> All the literature sent out in 1924 by the various citrus Exchanges and Associations shows that the borax treatment was something new and a distinct departure from any treatment known and followed theretofore, and was remarkably effective in preventing blue mold decay. At the same time government publications and trade journals were taking up the discussion of the borax treatment as a new treatment.
>
> All this shows that the citrus-growing world had found in this patent what it had been earnestly and unitedly searching for during a quarter of a century. Fulton of the Bureau of Plant Industry at its annual meeting held at Eustis, Florida, on April 7, 8 and 9, 1925, in speaking of the borax treatment said: 'For a long time fruitless search has been made for a satisfactory chemical agent that will control these (blue mold and stem) rots' and this agent was found in the borax treatment."

ARGUMENT.

I.

The Circumstances of Defendant's Infringement.

Infringement by the defendant cannot be and it is not denied. It is, however, a matter of very great interest from many aspects of this case to consider the circumstances under which that infringement began and was carried on.

The facts in this connection are developed in the record but it is not necessary to refer to the evidence in view of the statements of the petitioner's brief at pages 22-24, as follows:

> "The defendant owns outright only nine packing houses and of these only four used borax (R., I, 121). It owns an interest, but not a controlling interest, in six other houses of which four used borax (R., I, 121).
>
> "The defendant used borax in these few houses, not because it knew of plaintiff's process, not because it observed with envy the advantages accruing to plaintiff's licensees because of their licenses, but simply because borax was recommended by the Department of Agriculture. Defendant, like others in the industry receives circulars from the Department as a matter of course, and quite naturally and innocently supposes that the Government would not recommend anything which cannot be freely used. Thus, in the present case, defendant received a circular from the Department suggesting the use of a 5% solution of borax to retard decay. This circular was followed by others. In accordance with the custom, the head office embodied these circulars in letters and forwarded them to all packing house managers who were free to make such use of the information as they wished (R., I, 125); see, also, Defendant's Exhibit 3 (R., II, 1358). As a consequence a few houses tried out the Government's recommendations. And this was all before defendant had any intimation that the plaintiff was making claim to the exclusive use of borax for this purpose. An innocent infringement, certainly.

"In the spring of 1926, defendant was notified that it was infringing, but the packing season was then practically at an end. In the fall of 1926 before the opening of the season experiments were conducted to discover whether or not satisfactory results might not be had with less than the 5% recommended by the Department and with unheated water. As a result the defendant proved to its own satisfaction that a 1¾% solution of borax in unheated water gave complete satisfaction, and all packing house managers and field men were instructed to use such a solution, if any (Deft.'s Ex. 4, R., II, 1462). The practice for the 1926-27 season was in accordance with these instructions (R., I, 131). Beginning with the 1927-28 season, defendant has used no borax at all. The actual reduction in the loss from decay which the figures compiled for use in this case disclosed accurately for the first time was too small to warrant accepting the terms proposed by the District Court for vacating the injunction."

The first interesting point is that the defendant had *not* been using borax in any of its houses until its use was recommended by the Department of Agriculture. So it is apparent that in the defendant's practice borax had not previously been used, whether as a water softener or otherwise, and that, when the defendant acted upon the recommendations of the Department, it introduced a change in its practice.

The second point that is of interest and importance in the above quoted history of the defendant's operations is that it adopted the Government's recommendation to use borax "to retard decay". From this, it is obvious that the careful methods of handling to avoid bruises and cuts in the rind of the fruit which had been preached and practiced for many years was not (as the petitioner's brief would have us believe it was) a sufficient and satisfactory preventive of decay. The Department was recommending that some additional means should be employed, means which the defendant had never used; and defendant felt the need of that additional means.

Further, what was this circular from the Department suggesting the use of borax to retard decay and which resulted in the defendant's use of borax for the first time? It

was a letter from Fulton of the Department of Agriculture saying that "experiments that we have been conducting for the past eight months show that blue mold rot can be reduced by the use of a borax solution"—this information having been obtained by the Department through its experts who witnessed the respondent's operations of the patent in suit (pp. 34, 37-39, *supra*), this being, as another expert of the Department characterized it, a "most remarkable and marvelous accomplishment" (p. 41, *supra*), which was effected by the respondent's inventors, though as Fulton, who wrote the circular which resulted in the defendant's use of borax, later said "for a long time fruitless search has been made for a satisfactory chemical agent that will control these rots" (p. 42, *supra*). So the defendant's operations definitely were undertaken on the basis of the invention of the patent in suit.

Again, in the last sentence which we have quoted above from the petitioner's brief, an attempt is made to show that the use of borax is in any event an unimportant matter and not economically desirable. Yet all the rest of the history is contrary to that view. As appears from the other portions of the matter which we have quoted from the petitioner's brief, the Department having recommended the use of borax to retard decay, the defendant introduced this practice in eight of its packing houses and thereafter, when it was notified of infringement, it did not stop using borax but merely used a somewhat lesser amount, which was found to work less well (Def. Ex. 8, Vol. II, 1474) but, in defendant's judgment, sufficiently well for its purposes; then, when it was enjoined by the District Court, it stopped using borax. But was it content with this situation? Not at all. It appealed to the Circuit Court of Appeals in an attempt to reverse the decree of the District Court so that it might again use borax. And when the Circuit Court of Appeals decided against it, it was still not content but filed a petition for *certiorari*. And that the use of borax is a matter of great importance, utility and advantage is further and most distinctly emphasized by the fact that

petitioner was supported in its petition for writ of *certiorari* by the State of Florida, which filed a brief *amicus curiæ*, associating with itself the Florida Citrus Growers Clearing-house Association; and it was also supported by the United States which, on behalf of its Department of Agriculture, filed a brief *amicus curiæ;* and it is now supported by seven States whose Attorney Generals filed a brief *amici curiæ*. Now to say that borax used as disclosed in the patent in suit and as it was used by the defendant has no utility is absurd.

The defendant and others thus insist upon a right to use something which none of them had used until instructed by the invention of the patent in suit, something which these others had not been able to discover, though they had searched for something of the sort for many, many years. It may be true that the defendant had made no such search; though it was eager to adopt and promptly did adopt the result of the research of the respondent's patentees communicated to it by the Department of Agriculture. But the Department and other experts had certainly been engaged for years in what the Department characterized later as "a fruitless search", and this, in spite of the statement in the petitioner's brief (p. 42) that "there is not even a suggestion of any such investigation having been made from 1905 to 1923". That the statement in petitioner's brief is not correct is manifest from the statements made by official spokesmen for the Department of Agriculture from 1907 down through the years (see pp. 50-51, *infra*), and from the announcement in 1925 by Fulton of the Department of Agriculture, that "for a long time fruitless search has been made for a satisfactory chemical agent that will control these rots", and from the testimony of various witnesses.

The facts thus are definitely established that the defendant in embarking upon its infringing operations did so on the recommendation of the Department, which confessedly had been searching for years to find something of this sort and was unsuccessful and came to its recommendations for the use of borax only after having acquired knowledge of the respondent's use of its invention here in controversy.

II.

These Patentees Have Made a Real Invention of Most Substantial Importance.

As we have seen (pp. 6-24, *supra*), the experts of the Department of Agriculture and also the practical citrus industry, working energetically over a period of more than two decades in the effort to minimize the losses due to blue mold decay, found and taught, in reiterated statements, two things:

First, the only solution of the difficulty was to use *careful handling;* and *that* did not solve the problem.

Second, chemicals were worse than useless. On this second point, the experts said:

"I know of no wash yet discovered that will kill the spores of the decay fungus and at the same time not injure the fruit." That was in 1907 (*supra*, p. 8).

"It has often been suggested that the blue mold might be killed by a disinfectant in the wash water as is done with the parasitic fungus of the lemon which produces the brown rot. This does not appear from preliminary studies to be promising or advisable." That was in 1908 (*supra*, p. 8).

"No chemical could be used that would kill the spores of blue mold." That was in 1909 (*supra*, p. 10).

"We tried a number of these experiments [antiseptics in the wash water] in California, and had a man there one season working on that alone, but we did not get any results that were worth noting." That was in 1910 (*supra*, p. 10).

"Some of the chemicals we used appeared to increase the amount of blue mold decay." That was in 1911 (*supra*, p. 10).

"Do not try to disinfect the water for blue mold." That, also, was in 1911 (*supra*, p. 11).

"The question is often asked whether any chemical can be put into wash water to kill the blue mold spores in it or on the fruit. Considerable work has been done along this line and nothing has been found that can be put in the water which will kill the blue mold spores and not injure the fruit. The only thing to do is to keep the fruit free from injuries." That was in 1912 (*supra*, p. 12).

"As yet no disinfectant has been found which proves effective against blue mold." That was in 1914 (*supra*, p. 14).

"It is not believed any solution of penetration and disinfecting power to kill the infection and not injure the fruit will be found, but further work in this direction is being carried on." That, also, was in 1914 (*supra*, p. 16).

"The application of fungicides to the trees or disinfectant to the wash-water does not control the disease." That was in 1915 (*supra*, p. 17).

"You cannot depend upon blue stone in the wash water to kill blue mold spores." That was in 1921 (*supra*, p. 19).

"Chemical disinfection in the soaking tank has not been effective." That was in 1923 (*supra*, p. 20).

And to the same effect is the testimony of various witnesses (pp. 21-24, *supra*).

The patentees of the patent in suit, however, proceeded along new lines. They reasoned as follows:

The inevitable wounds in the surface of the fruit must be recognized as inevitable; no amount of "careful handling" can prevent them. The blue mold spores *will* enter those wounds; there is no way in which they can be kept out. The spores, in the wounds, cannot be killed by chemicals without poisoning or injuring the fruit. Some way must be found which will recognize the presence of the spores in the wounds, but will render them innocuous by preventing their growth. Their experiments proved that borax will be effective for this purpose if the treatment is such that the borax will

impregnate the rind tissues exposed by wounds, and if that borax is permitted to remain in the wounds.

The avoidance of an attempt to *kill* the blue mold spores, but, instead, merely to inhibit their growth and development by rendering the exposed skin tissues resistant to their action was entirely a new line of thought for dealing with commercial and practical treatment of fruit; and is clearly set forth in the patent (pp. 26-27, *supra*).

It was not until after the invention of these patentees became known, that any other persons in the art worked, as was said by the experts of the Department of Agriculture, with "a view to finding inhibiting rather than killing substances" (p. 39, *supra*)—this being "a different line of attack from those previously used" (p. 43, *supra*).

The patentees found that borax was the best such substance; and it is the one which everybody now wants to use.

That this is not an obvious substance for this purpose is clear from the evidence. Its action is not yet thoroughly understood; it is only a mild disinfectant "but it seems to have some influence not entirely understood on the rind of the fruit which enables the solution to prevent the development of decay" (Vol. I, 211, x-Q. 99*a*). And that the use of borax was not obvious is shown by the fact that, even after the invention was announced and demonstrated by the patentees, the experts did not say "of course, that will work". Instead, they made elaborate and extended tests of their own and were, at first, cautious in their endorsement of the process, taking it up in a hesitant and tentative manner (pp. 36, 39-40, 44, *supra*). Certainly that means that it was *not an obvious* solution of the problem. Such a situation is often cited as an indication of invention. Thus, this Court, in finding novelty in the process of the patent in *Eibel Co.* v. *Minnesota & Ontario Paper Co.*, 261 U. S. 45, 55, said:

> "There were those who hesitated to take the venturesome step to give such an unheard of pitch to the wire and waited until others assumed the risk."

In *Pyrene Mfg. Co.* v. *Boyce,* 292 Fed. 480, 484, the Court of Appeals for the Third Circuit, in finding invention said:

> "This history (the commercial history) is interesting * * * for it shows that when the device appeared in the art it was regarded as so thoroughly useless that it provoked mirth among automobile engineers. But later it was accepted by the public * * * and was adopted by manufacturers", (on a large scale).

And the Circuit Court in New York, in *Westinghouse Air Brake Co.* v. *New York Air Brake Co.,* 59 Fed. 581, 593, said:

> "Experiments made to ascertain the practicability of the new use are strong evidence to prove that invention was required to conceive of it."

Why any experiments at all, if those skilled in the art knew how to treat fresh fruit, in preparation for market, with borax for the prevention of blue mold decay?

The result, however, of all these tests was the conclusion of the experts that "this is a most remarkable and marvelous accomplishment" (p. 41, *supra*).

It proved to be the long-sought solution of the problem, and went into large use.

As was said in *Gandy* v. *Main Belting Co.,* 143 U. S. 587, 594:

> *"In view of the fact that previous attempts, of which there appear to have been several, to make a practical canvas belt had been failures,* and that Gandy had been experimenting with the subject for several years before he discovered that a change was necessary in the structure of the canvas itself, we do not think his improvement is a change in degree only, or such an one as would have occurred to an ordinary mechanic, and our opinion is that it does involve an exercise of the inventive faculty."

And, in *Eibel Process Co.,* v. *Minnesota & Ontario Paper Co.,* 261 U. S. 45, 53, 54, 56 it was said:

> "A thorough examination of the whole voluminous record produces a satisfying conviction, first, that *for*

years news print paper makers and manufacturers of paper-making machinery were engaged in seeking a method of increasing the speed of the news print machines * * *.

"Our conclusion is confirmed, and indeed the importance of the issue of fact as to maximum speed before Eibel is minimized, by the circumstance uncontroverted, that the owners of these fastest machines, at once *upon Eibel's publication of his discovery, adopted his pitch and increased their product.*" * * *

"The fact that the Eibel pitch has thus been generally adopted in the paper-making business and that the daily product in paper making has thus been increased at least twenty per cent. over that which had been achieved before Eibel is very weighty evidence to sustain the presumption from his patent that what he discovered and invented was new and useful."

We submit that, tested by all the known rules, the patentees of the patent in suit made a very real and important invention for which they are entitled to the protection of the patent laws.

III.

The Importance of the Invention Is Widely Recognized. It Solved a Problem of Long Standing and Supplied a Long Felt Want.

The success, value and importance of the invention in controversy would not seem to require detailed discussion in view of the insistence of the defendants and others upon using it (pp. 37-38, 46-49, *supra*).

We do not wonder that they do wish to use it because, as the record shows, it has great utility and has been widely adopted by those operating under license. Thus——

1. It has largely reduced decay losses (Knox, Vol. I, 25-26, 30-31; Wolstencroft, Vol. I, 45-47; Jacobs, Vol. I, 56-57; Pierce, Vol. I, 58; Cartwright, Vol. I, 74-75; Hendrix, Vol. I, 81; Ritchie, Vol. I, 84-86; Chase, Vol. I, 62-63).

2. It has reduced the necessity for refrigeration in shipment (though some of the trade still use it). Refrigeration delays decay, but causes the fruit to decay more rapidly when it comes out of refrigeration and into the hands of the dealer and consumer (Knox, Vol. I, 28-29; Wolstencroft, Vol. I, 45-47; Earley, Vol. I, 87-88; Cartwright, Vol. I, 74-75; Hendrix, Vol. I, 81-82; Skinner, Vol. I, 68-69; Parrish, Vol. I, 98). The saving in refrigeration is most pronounced when respondent's complete process, including the final film-coating with paraffin is used. But since the paraffin treatment alone was not altogether successful commercially (page 22, *supra*) and was made so only through development of the borax treatment, the latter is primarily responsible for the saving.

3. The treated fruit may, without injury, be held in precoolers before shipment, which is of importance as, in this way, it is possible to tide over a period characterized by a glutted market and low prices and thus regulate distribution (Knox, Vol. I, 30-31; Pierce, Vol. I, 58-59).

4. More fruit is available for shipment. Prior to the use of respondent's process much perfectly edible fruit was culled out and thrown away because of minor but visible surface injuries which would inevitably have caused decay. Now a large part of such fruit can be treated, packed and shipped without decay (Wolstencroft, Vol. I, 46; Cartwright, Vol. I, 75-76; Hendrix, Vol. I, 82).

5. Because of these advantages the respondent's process has gone into very wide use.

Knox, a director of the California Fruit Growers Exchange, and manager of the sub-group of packing house associations known as the San Antonio Exchange (Vol. I, 24-5), testifies that the borax treatment was adopted generally by the packing houses of the San Antonio group "because of the remarkable record of the season of 1924 at the Walnut House", whose manager (Wolstencroft) testi-

fies at length (pp. 44-5) regarding those 1924 commercial operations and tests and tells of how they were attended and witnessed by many men prominent in the fruit industry, including Barger, of the Department of Agriculture, members of the field department of the California Fruit Growers Exchange, the largest fresh fruit shipping and marketing organization in the world, and Dezell, its managing executive, all of whom showed the most intense interest, some even to the extent of personally participating in the tests and taking away samples of the treating material for further test. And as a result, the California Fruit Growers Exchange issued on June 20, 1924, its bulletin "To All Shippers" (Vol. II, 1312), based on the results of elaborate tests and investigations by its own field department, recommending the Brogdite (borax) treatment as the long-sought solution of a difficult problem. This bulletin is identified by Wolstencroft (Vol. I, 44). In December, 1924, the Exchange sent out another Bulletin (Vol. I, 33-4; Vol. II, 1307) again warmly commending "To All Shippers" the borax treatment which, in the meantime had been "discovered" by the Department of Agriculture as we have already seen (pp. 3, 36, 38, *supra*) and enthusiastically endorsed by Department experts.

Earley, general manager of the Mutual Orange Distributors, the second largest citrus fruit shipping and marketing organization in California, testifies (pp. 88-9):

> "I had every one of our association managers investigate the same thoroughly on his own behalf and report the findings. It was unanimous that it was a splendid advance in the keeping of oranges and then I brought the matter to the attention of our board of directors and they instructed me to make a contract for our entire organization."

By the time this suit came to trial, a majority of the constituent associations of the California Fruit Growers Exchange were using the borax treatment, either under license from respondent, or as infringers using the so-called "Gov-

ernment formula", according to the testimony of Knox, a director of the Exchange (Vol. I, 32-3). Wolstencroft, basing his statement on the official reports sent out daily by the Exchange to all its shippers, estimated that 80 to 90 per cent of the Exchange associations were then using the borax treatment (pp. 47, 49), *and all except those licensed by respondent were using borax alone, without the subsequent waxing or Brogdex treatment* (Knox, 53). Over 70 per cent of the entire citrus fruit crop of California is packed through Exchange packing houses (Knox, 54).

In Florida, another large infringer, the Florida Citrus Exchange, took up the borax treatment under the name "Zeltrocide" (Vol. I, 104, 110-111; Vol. II, 1424-32); and there is also extensive licensed use there (Vol. I, 63, 94, 98, 108).

In attempting to minimize these facts, Petitioner's brief, in effect, represents Dezell, general manager of the California Exchange, as a spineless individual with no mind of his own, pitiably led astray by "the glamor of the Brogdex and Brogdite publicity" (brief, p. 95), and petitioner also says (p. 94):

> "The courts below gave a deep meaning to what was merely high pressure publicity, skillfully and effectively applied."

Assertions of this kind are quite unsupported by the record. The circular (Def. Ex. 5, Vol. II, 1465-6), which petitioner's brief goes on to imply was publicity bait by which the San Antonio Fruit Exchange and the Mutual Orange Distributors were lured into becoming respondent's licensees, is the sole matter which petitioner even attempts to cite as justifying these allegations. But that circular was put out in 1921, which was before respondent came into existence and more than a year before Trowbridge (who, with Brogden, *jointly* made the invention *in suit*) came on the scene in November, 1922 (Vol. I, 97). It has nothing to do with the borax treatment. A similarly misleading reference to that circular appears at the top of page 56 of petitioner's brief in the discus-

sion of the Bishop "use". That circular merely refers to an earlier and unsuccessful attempt to *kill* the spores by means of "antiseptic" solvents mixed with paraffin, these solvents evaporating and leaving on the fruit a covering of paraffin of such character as to constitute an *air-tight* coating (paragraphs 6, 7 and 17 of circular, pp. 1465-7). *That* was along the lines of the unsuccessful Bishop prior patent and was similarly unsuccessful (pp. 100-101, *infra*). The optional paraffin coating described in the patent in suit, but not in issue here, does not include antiseptics in its composition and is so applied that it is *not* air-tight but permits the fruit to breathe (Vol. I, 593, 595-6).

It is perfectly clear that the invention in suit was enthusiastically adopted by the industry solely on its proven merits.

Beginning at page 99 of petitioner's brief, considerable space is devoted to a discussion of commercial success as bearing on the question of patentable invention. Evidently defendant conceives proof of commercial success to have been plaintiff's principal object in offering testimony showing the widespread adoption and use of the Brogden and Trowbridge invention during the last few years. But defendant misses the point.

Although great commercial success is clearly shown, the evidence also conclusively establishes something still more important, namely, that for a quarter of a century there had been a crying need for some means of effectively controlling blue mold decay, that scientists and workers in the industry had been vainly endeavoring to find a satisfactory solution of the problem, and that immediately upon introduction of the borax process into the industry by plaintiff, the industry at once recognized it as the thing that had been sought for so many years and adopted it universally. Under such circumstances there is always a strong presumption that what has been done amounts to patentable invention, a fact which has often been recognized by this Court. *McClurg* v. *Kingsland*, 1 How. 202; *Gandy* v. *Main Belting Co.*, 143 U. S. 587,

594; *Eibel Process Co.* v. *Minnesota & Ontario Paper Co.*, 261 U. S. 45, 53, 54, 56; *Mowry* v. *Whitney*, 81 U. S. 620.

In the case of *Heller Bros. Co.* v. *Crucible Steel Co. of America*, 297 F. 39, the Circuit Court of Appeals for the Third Circuit said (p. 43):

> "We think the patent in suit not invalid for want of invention. *For upwards of 50 years various methods for producing hollow drill steel in commercial lengths had been tried. None fully satisfied the want. The method of the patent does.*"

In *United Verde Copper Co.* v. *Peirce-Smith Converter Co.*, 7 F. (2d) 13, the Circuit Court of Appeals for the Third Circuit said (p. 17):

> "* * * Moreover, were the question of invention closer than it seems to be, *the position which the invention promptly took in the art* would aid in deciding it, for it is recognized that *the fact that an art has long presented a problem and that the process of a patent has solved it, as well as the fact that the process has gone into large general use and has produced new and economical results, speak for its inventive character.* * * *" (Citing cases.)

In *Trane Co.* v. *Nash Engineering Co.*, 25 F. (2d) 267, 269, the Circuit Court of Appeals for the First Circuit said:

> "By November, 1926, over 17,000 of these systems had been installed. This is strong evidence, from market overt, of the value of this combination; *it met a long felt want.* As pointed out by Judge Morton (20 F. [2d] 439), the defendant and its predecessors had long been in the heating business and none of their engineers had ever solved the problem. *David* v. *Harris* (C. C. A.) 206 F. 902; *Kurtz* v. *Belle Co.* (C. C. A.) 280 F. 277. Jennings substantially changed the art of vacuum steam heating."

IV.

The Patent Properly Covers the Invention.

The patentees, as we have seen at pages 26-27, *supra*, recognized the fact that blue mold spores will enter the inevitable wounds in the skin of the fruit, and that it is useless to attempt to kill them, but they should, in some way, be prevented from growing and spreading to cause decay.

They fully set forth in their patent in suit (pp. 27-28, *supra*, the advance made by them in the art, namely, the application of this principle for the first time to solve the "problem peculiar to commercial large-scale methods of handling fresh fruits", as the Court of Appeals understandingly characterized it (Vol. I, 573).

The patentees carefully describe typical procedures by which growth and development of the spores may be prevented through the use of a solution of borax, properly applied. They describe the desirable strength of the solution, and its method of application whereby it is caused thoroughly to enter the pores of the skin and impregnate exposed skin or rind tissues with borax (pp. 30-31, *supra*).

The process is covered by certain of the claims, one of which we have quoted at page 33, *supra*. It emphasizes the effective impregnation of the exposed rind or skin tissues (*i.e.*, exposed by the inevitable, though often slight, mechanical injuries) with the borax solution, the fluidity, strength and temperature of the solution, and the duration of treatment, being such as to bring this about.

Also, the borax, having impregnated the wounds in the skin, is not to be washed off, but is to remain there in effective quantity until the fruit is consumed. It is to continue to be present and continue to act to prevent the growth of the spores.

That is, by the manufacturing process an article has been produced which never before existed—fruit, the rind of

which carries borax. That article does not grow; it is *made* by using, as a part of the complete article, something which has grown—much as one uses wood or other products of nature as a part of manufactured articles.

As was said by the Circuit Court of Appeals for the Third Circuit in *Riter-Conley Mfg. Co.* v. *Aiken*, 203 Fed. 699, 703:

> "Thus, whether required in that case or not, the statement of Judge Acheson in *Johnson* v. *Johnston* (C. C.), 60 F. 618, that 'the term "manufacture" as used in the patent law, has a very comprehensive sense, embracing whatever is made by the art or industry of man, not being a machine, a composition of matter, or a design' is in our judgment sound."

In the present case, the Circuit Court of Appeals held (35 Fed. (2d) 106 and Vol. I, p. 574):

> "The product claims define an article of manufacture, since the fruit is the result of a process which is defined and described and not a natural product. The product is a combination of the natural fruit and a boric compound carried by the rind or skin in an amount sufficient to render the fruit resistant to decay. The complete article is not found in nature and is thus an article of manufacture."

And that is entirely sound.

Section 8 of the Constitution provides that "the Congress shall have power * * * to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries".

Pursuant to this granted power, the Congress has enacted Section 4886 of the Revised statutes (Title 35 U. S. C. A., Sec. 31), which provides that

> "Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof"

may obtain a patent therefor.

The term "manufacture" is defined not only in *Riter-Conley Mfg. Co.* v. *Aiken*, from which we have quoted, but also in many other cases.

The authorities cited by petitioner do not support its contention that the product of respondent's process is not an article of manufacture within the meaning of the patent statutes.

The tagged oyster case (*Armstrong Seatag Corporation* v. *Smith's Island Oyster Co.*, 254 Fed. 821) well illustrates what is and what is not an article of manufacture. The Court there found that neither an oyster nor a spring chicken becomes an article of manufacture *"simply because of being tagged"*. That is to say, the oyster remained the same oyster, and the chicken the same chicken, both absolutely unchanged in any respect. Affixing the tag endowed neither of them with any characteristic or property which it did not already possess.

In the present case, the situation is altogether different. Plaintiff's treated orange is *not* the same orange it was before treatment. Its rind, and especially any rind tissue which may be exposed by scratches, cuts or other injuries, however minute and practically invisible they may be, carries borax which functions to endow it with characteristics it did not previously possess, namely, ability to resist the ravages of blue mold decay. For this reason it is no longer the same thing as an orange in the natural untreated state. It is a new and different orange, positively and accurately distinguishable by chemical examination of its rind and by its keeping qualities from the untreated orange. And it results from a definite manipulation of or operation upon a natural orange, that is, it is "made by the art or industry of man". It is obviously not classifiable as a machine, a composition of matter, or a design; it is an article of manufacture.

The tariff cases cited by petitioner are not applicable to *narrow* the definition of an article of manufacture as contemplated by the patent statute. This is because the question of what is and what is not an article of manufacture under the

highly technical provisions of tariff schedules is determined by the courts, in any given instance, upon a rule or underlying principle obviously very different from that controlling the question in patent law.

In determining whether or not a certain natural product which has received some treatment comes under a designation "manufactures of * * *" in the *tariff schedule,* there seems to be a basic principle applied by the Courts, to aid them in reaching a conclusion, viz: Is the *use* the same after the treatment as before? If the use is different, then the resultant article comes under the classification "manufactures of * * *", but if the *use* is the same, then this determines that the article does not come under that designation.

For example, if shells, a natural product *used as ornaments,* are prepared abroad, at considerable labor, still to serve as *ornaments* only, they will be admitted free of duty as unmanufactured shells, and will not be considered as dutiable under the classification "manufactures of shell." This is so even where the treatment abroad includes etching inscriptions on the shells, because with the etched inscriptions the shells are still *used only as ornaments. Hartranft* v. *Wiegmann,* 121 U. S. 609.

So a *bottle-cork* imported into this country and subjected to considerable treatment here, but when finished *still serving as a bottle cork,* has the same *use* as before and therefore is not considered as coming under the tariff designation "manufactures of cork", for the purpose of a drawback or rebate when exported as a *cork* in a beer bottle containing export beer. *Anheuser-Busch* v. *United States,* 207 U. S. 556.

The other tariff cases cited by respondent involve applications of this general principle.

Hence, the Courts in discussing articles of manufacture in connection with the *tariff laws* have entirely different rules of construction from those employed in considering the patent statutes.

Plaintiff's new article of manufacture, wholly new in the art and filling a long felt want in the industry, defendant

admittedly produces by its infringing process, and infringing fruit is readily identified by simply washing thoroughly with hot water and chemically testing the washings (Vol. I, 113). The dealer in fresh fruit has no greater difficulty in determining whether he is handling an infringing article than has a dealer in any of a multitude of other manufactures such, for example, as dye materials, adhesive and cementitious compositions, etc., which are commonly the subject matter of patents but of which the infringing or non-infringing character can not be ascertained merely upon inspection but only by some chemical or physical test. The dealer buys fruit in containers on which are prominently displayed the label and brand of the packer, and by reasonable inquiry he can avoid buying infringing brands, or he can protect himself by requiring proper assurances of those from whom he buys.

But the petitioner also urges (Brief, pp. 120-124) that the article claims are invalid under the doctrine of *Holland Company* v. *Perkins Glue Co.*, 277 U. S. 245. The petitioner on page 120 of its brief, sets out claim 28 of the Perkins patent and claim 24 of respondent's patent in issue. The Perkins claim was criticized by the Court as follows (277 U. S. 256):

> "Perkins' second way of describing the *starch ingredient* of his product was in terms of the use or function of the product itself. The chosen starch ingredient was to possess such *qualities* that when combined with three parts of water and with alkali it would produce a product 'as good as animal glue' for veneering, or having the properties of animal glue, *these properties being described in terms of its functions.* The *ingredient* was thus described, not in terms of its own physical characteristics or chemical properties or those of the product, but *wholly in terms of the manner of use of the product.* Any glue *made* of a starch base, whatever its composition, water absorbtiveness or other properties, combined with alkali, and three parts of water, which has substantially the properties of animal glue, or is as good as animal glue for use in the wood working trades, is claimed as Perkins' glue. Thus the inventor who advances the art by discovery that a certain defined

material may be combined in a product useful for certain purposes seeks to *extend* his monopoly to *any* product which may subsequently be made from materials not within any defined range described in the patent, but which is likewise useful for those purposes.

"But an inventor may not describe a *particular starch glue* which will perform the function of animal glue and *then claim all starch glues* which have those functions."

Nothing said by the Court in criticism of the Perkins claim has any proper application to claim 24 of the patent in issue. The latter claim does not attempt to extend the monopoly beyond the particular invention set forth in the specification. It sets out the ingredients of the product in specific and definite terms which cannot be misunderstood. It does not attempt to define the ingredients by their function.

The particular language of claim 24 (p. 33, *supra*) of the patent in issue which petitioner's brief criticizes, comprises a statement of *quantity* and not of an *ingredient*, to-wit "very small but sufficient to render the fruit resistant to blue mold decay." It is submitted that this definition as to the amount is not objectionable and will be fully understood by those skilled in the art, particularly in view of the holding by this Court in *Carnegie Steel Co.* v. *Cambria Iron Co.*, 185 U. S., p. 432, that

"The claim of a patent must always be explained by and read in connection with the specification."

The expression "very small" is thought to be analogous to those considered by this Court in *Eibel Process Co.* v. *Minnesota & Ontario Paper Co.*, 261 U. S., pp. 45, 66, where the Court said:

"Expressions quite as indefinite as 'high' and 'substantial' in describing an invention or discovery in patent specifications and claims have been recognized by this Court as sufficient."

The use of the word "small" in a claim was held to be sufficiently definite in two District Court cases, to wit: *H. J. Wheeler Salvage Co.* v. *Rinelli & Guardino,* 295 F. 726; *Salvage Process Co.* v. *James Shewan & Sons,* 26 F. (2d) 260.

If claim 24 here in suit were to be phrased so as to be comparable with the Perkins Glue claim, from the viewpoint from which this Court criticized that claim, it would read—"fresh fruit that is resistant to blue mold decay". The claim is *not* in that form, nor of that scope (see p. 33, *supra*).

The petitioner, on page 49 of its brief, refers to the opinion in *Sewall* v. *Jones,* 91 U. S. 171. In that case there were in issue two patents to the same inventor, one for the process and the other for the product, the latter containing only one claim which, it is important to note, defined the product by the process of making it. The record indicated that the process *as carried out in actual practice* was valuable, and, perhaps, might have been patentable.

The Court, however, called attention to the fact that the patent contained no description of these alleged essential features of the process as used, and held, among other things, that if these features were essential, the failure to include them made the patent invalid. A strong dissenting opinion was filed by Justice Clifford, but his argument as to the great improvement made by the inventor was based largely on the features of the process as carried out in practice, which features, as before stated, and as pointed out in the main brief, were not disclosed in the patent. So far as the *patents* in suit were concerned, the process as described and claimed, was merely the application of the old process of the Appert reference to a different article and *without the production of any new and unexpected result.*

However, in another case where the application of the old process to a new article gives "a result, which though anxiously sought, had not been obtained" this Court has held the patent valid. *Mowry* v. *Whitney,* 81 U. S. 620.

It is submitted that the case of *Sewall* v. *Jones,* has no application to the facts in the present case.

Petitioner's brief, page 121, quotes some language from an opinion by Judge Dickinson on a motion for preliminary injunction in the case of *Brogdex Co.* v. *California Fruit Growers Exchange,* the opinion being printed in an appendix to the brief. It is to be noted that a controlling reason for the refusal of the preliminary injunction was that the defendant in that case promised to see that no further infringement occurred until final decision; the Court saying "We have the assurance of the defendant that the patented process of preparing fruit for the market will not be employed on the fruit sold by them" (Petitioner's Brief, p. 162).

In the opinion, Judge Dickinson sets forth at considerable length the contentions of the defendant. Most of the quotation on page 121 of Petitioner's Brief is clearly a mere recitation of what the defendant asserts, viz: that it is prepared to prove certain things and that the claims of the patent are within the condemnation voiced in *Holland Co.* v. *Perkins.* All Judge Dickinson says is that the *defendant* asserts that. He expresses no opinion on this point.

V.

The Prior Art Emphasizes the Novelty and Patentability of the Process and Article in Suit.

Defendant offered in evidence a long list of prior patents and publications which were set up in the answer and which, it insists, are clear anticipations of the claims of the patent in suit. Certain other publications, not set up in the answer, were referred to for the first time at the trial but are of course inadmissible except to show the general state of the art as it existed prior to the filing date of the patent in suit. Still others are now cited, for the first time, in a footnote on pages 17-18 of petitioner's brief.

Defendant further relies upon the prior art as establishing that there was no invention in what Brogden and Trowbridge did as claimed in their patent.

But this prior art neither anticipates the patent in suit nor shows that it is invalid for lack of invention. It has quite the contrary effect.

The defendant, in the attempt to support these defenses, introduced in evidence 10 prior publications, 14 United States patents and 10 British patents—34 in all. Many of these have been abandoned by petitioner, but about half of them are still urged. Why so many? Their great number immediately suggests that there is nothing of substance in them. And there is not.

Although this Court may not care to examine the prior art, in view of the successive considerations thereof by the Courts below and their concurring decisions, we shall outline it generally at this point. A more detailed discussion is to be found in the Appendix at the end of this brief.

The Prior Publications. (See also Appendix, pp. 97-99, *infra.*)

While showing generally that the use of borax and boric acid as preservatives *in* food and for other purposes was old, the prior publications disclose, even in that field, wide differences and contradictions in results and conclusions reached in many investigations. They also disclose that molds behave very differently when grown on different culture media, and that under these differing conditions, the effect of chemical agents, including boric acid, upon mold development varies widely.

None of these publications describes treating fresh fruit for prevention of decay.

The Prior Patents. (See also Appendix, pp. 99-108, *infra.*)

These may be characterized generally as relating to food *preservation,* properly speaking, in the sense of canning, pre-

serving, pickling, or equivalent procedures, in which an antiseptic or preservative is used.

The patent to Bishop, which is relied upon most strongly by petitioner is fully discussed in the Appendix, at pages 99-105.

Bishop describes a procedure in which sealing or encasing fruit or other article of food in an *air-excluding* gelatin covering is the object sought, the article of food being initially washed with a boric acid solution to *"kill"* germs. The patent does not mention *fresh* fruit, or blue mold decay; nor does it deal in any way with the conditions to be met and the problems to be overcome in preventing blue mold or kindred decay in the commercial handling of fresh fruit to be marketed as such.

Moreover, as the testimony of defendant's experts conclusively establishes, if it be attempted to treat fresh fruit, following the directions given in the patent, the fruit is not only rendered commercially worthless because of its appearance and other physical characteristics, but is *caused* to spoil (pp. 100-101, *infra*). The Bishop air-tight covering, which causes the spoilage is a wholly different thing from the optionally applied film coating of paraffin, described in the patent in suit, which is *not* air-tight but permits the fruit to breathe (pp. 101-102, *infra;* 29, 58, *supra*).

The procedures disclosed by deStürler and Häusler are similar to that of Bishop in requiring hermetic sealing of food articles as a *sine qua non* and, for the same reason, are inoperative and worthless for application to fresh fruit.

The British patent to Storer proposes packing fruit in *dry* packing material carrying a boric compound, but the fruit itself is not treated in any way and the procedure has nothing to do with the invention in suit. In fact it does not touch at all upon the broad problem involved.

The remaining patents relate to mere pickling and canning methods and require no discussion here (see pp. 106-108, *infra*).

The very volume of the prior art set up by the defendant serves to emphasize the patentable character of what Brogden and Trowbridge did.

In *Carnegie* v. *Cambria,* 185 U. S. 403, 445, this Court said:

> "It should be borne in mind that this process was one not accidentally discovered, but was the result of a long search for the very purpose. The surprise is that the manufacturers of steel, having felt the want for so many years, should never have discovered from the multiplicity of patents and of processes introduced into this suit, and well known to the manufacturers of steel, that it was but a step from what they already knew to that which they had spent years in endeavoring to find out. It only remains now for the *wisdom which comes after the fact* to teach us that Jones discovered nothing, invented nothing, accomplished nothing."

In *American Stainless Steel Company* v. *Ludlum Steel Co.,* 290 Fed. 103, 105, 106, the Circuit Court of Appeals for the Second Circuit said:

> "This record is replete with accounts of speculations on this subject and dissertations thereon by men confessedly skillful in their day in the arts of steel making and metallurgy. These publications have been advanced by defendant to minimize the inventive concept of Haynes and Brearley. *To us they magnify it. There are many inventions which seem to have been gathered, as it were, from the scrap heaps of human effort.* They appear to observers as the results of accident, rather than intelligent design. But where men, doubtless well equipped for a particular sort of work, have hoped and investigated and even prophesied as to what could be done, but never did it, and other men similarly equipped have by intensive study and skillful experiment succeeded, such success commands and should receive a greater meed of intellectual appreciation than is accorded even to the cleverness of picking up and utilizing an unconsidered or discarded trifle."

In referring to the work of certain prior British patentees set up as an anticipation, the Court said:

> "They were perhaps among the prophets; but it requires more than prophecy of what may be done, or than declarations of what ought to be accomplished, to make a good patent reference, not to speak of an anticipation. It is necessary to show with reasonable certainty how the desired result can be accomplished. * * *."

In *Westinghouse Air-Brake Co.* v. *Great Northern Ry. Co.* (2 C. C. A.), 88 Fed. 258, 263, Judge Shipman said:

> "The prophetical suggestions in English patents of what can be done when no one has ever tested by actual and hard experience and under the stress of competition the truth of these suggestions, or the practical difficulties in the way of their accomplishment, or even whether the suggestions are feasible, do not carry conviction of the truth of these frequent and vague statements."

In *Fleischman Yeast Co.* v. *Federal Yeast Corporation* (D. C. Md. 1925), 8 Fed. (2) 186, 197, Judge Soper said:

> "If the foreign patents and the Henneberg articles cited against the patent are compared with its disclosures, it will be seen that, so far as the step of neutralization in the manufacture of bakers' yeast is concerned, the former are vague and indefinite, while the latter makes specific and clear statements that the employment of alkaline substances are of great advantage in the quantity and quality of the product. It is one thing to show that, when yeast is used in fermentation processes, its fermentative power and duration of life will be enhanced by offsetting deleterious acidity or that in producing pure yeast cultures in the laboratory with distilled water, antacid substances should be used and it is quite another to demonstrate that, when the end in view is the production of large quantities of yeast for its own sake, neutralizers may be advantageously employed. As has so often been said in patent cases, it is the last step which counts." (Citing cases.)

This case was affirmed on appeal, 13 Fed. (2) 570. In speaking of certain earlier workers in the field, Judge Rose said (p. 570):

> "* * * Some of them were among the most highly skilled of the world's experts in the yeast-making art. They were in immediate and almost daily touch with the practical men of the industry, as well as with those who controlled the capital employed in it. They were on the look-out for every possible improvement in its methods. If they had known of the Hayduck process, they would have made prompt use of it."

The defendant's theory, in putting in this mass of material, seems to have been that any prior patent or publication mentioning borax or boric acid as being used, or attempted or suggested to be used, as a preservative, is pertinent. Such patents and publications *might* be pertinent *if* Brogden and Trowbridge were claiming to have discovered that borax or boric acid was an antiseptic. They make no such claim. What they did do was to ascertain that borax was a particularly good inhibiting agent *for their purposes*, namely, controlling blue-mold decay in the commercial large-scale handling of fresh fruit, when applied *in their manner*, and what they have patented is a process for applying it and the product resulting from such application.

The prior patents and publications show nothing of that. They disclose, what we fully admit, that borax and boric acid had, many years ago, been proposed as preservatives in canning and pickling processes—even before any problems had arisen in connection with the decay caused by blue mold on fresh citrus fruits, and also in subsequent years. *But they do not disclose any process by which the results of the invention in issue could be attained.*

The teachings were, in fact, contrary to any idea that they were effective for that purpose.

Both of the lower Courts held that the prior art did not

disclose the invention of the patent in suit.* The District Court said (Vol. I, 18):

> *"Such process is nowhere found in the disclosures of the prior art* though it is true that, viewed retrospectively and ignoring the long unsuccessful search for a remedy, the claimed process would seem to be wanting in invention over the disclosures of the prior art" (Vol. I, 18).

VI.

The Reasons Urged by Petitioner for Holding the Patent Invalid Are Actually Reasons for Sustaining It.

The petitioner conceives that there are three good reasons why the patent is void:

> First, petitioner says borax and boric acid had long been known and used as antiseptics and *food preservatives.* If that is true, the conclusion is the reverse of that which petitioner would draw. *In spite* of such assumed knowledge, the whole art of preparing fresh fruit for market, seeking long and earnestly for means of inhibiting blue mold decay, *concluded that no chemical would do it.* So there must have been a real problem in spite of the assumed knowledge, and Brogden and

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* It might possibly be inferred from what is said in the first paragraph on page 6 of petitioner's brief that, *with respect to the prior patents and publications* (among other things) the District Court said

> "That borax was used in the preparation of citrus fruit for market by several persons prior to the date of the invention in suit cannot, I think, be seriously questioned."

The Court made this statement, not with respect to the prior patents and publications, but solely in connection with the evidence which petitioner offered in support of the alleged prior uses, which evidence was held insufficient for the purpose. See decision, Vol. I, 519.

Trowbridge solved it after so many others had given it up. That is one of the situations which demonstrates the existence of invention.

Second, petitioner says, it had long been known that borax and boric acid were toxic to blue molds. This statement is too broad, as it takes no account of culture media, conditions of use, and other factors; but even if it be assumed to be true, the invention is again emphasized for the reasons just indicated.

Third, petitioner says, the prior patents and publications and public uses show that the patent in suit is invalid. There *were* prior patents and publications, but they did not teach the invention herein accomplished. There *were no prior uses.*

To paraphrase the language of this Court in *Diamond Rubber Co.* v. *Consolidated Rubber Tire Co.*, 220 U. S. 428 (441), petitioner gives the tribute of its praise to the prior art; it gives the Brogden and Trowbridge process the tribute of its imitation.

The defense in this case is well characterized by the language of the Court of Appeals of the 8th Circuit in *Naylor* v. *Alsop Process Co.*, 168 Fed. 911 (at p. 917):

> "The prior art that has been brought to our notice is mainly literary. Defendants have *ransacked patent offices in America and Europe,* and brought together a formidable collection of patents. *Many of them are paper patents* and others relate to remote arts. Piecing together excerpts and elements from this wide search, they have built up a formidable *speculative argument to show how simple and easy was the step taken by Andrews.* This is a form of argumentation familiar in patent litigation. Though it seldom succeeds it is often the only recourse of the infringer. The patent law, however, has its proper place in the realm of *actual industrial life,* and not in the limboes of parchment casuistry. The merit of a patent is to be determined, not by its standing in dialectics, but by its *actual effects in the art to which it belongs.*"

This principle has often been affirmed. Thus, this Court in *Diamond Rubber Co.* v. *Consolidated Rubber Tire Co.*, 220 U. S. 428, said at page 435:

> *"Knowledge after the event is always easy, and problems once solved present no difficulties, indeed, may be represented as never having had any,* and expert witnesses may be brought forward to show that the new thing which seemed to have eluded the search of the world was always ready at hand and easy to be seen by a merely skilful attention. *But the law has other tests of the invention than subtle conjectures* of what might have been seen and yet was not."

In *General Electric Co.* v. *Hoskins Mfg. C.*, 224 F. 464, the Circuit Court of Appeals for the Seventh Circuit said (p. 467):

> "Now, the law is well settled that in order to anticipate a later invention, the prior description must be such as to show that the article described in the patent can be certainly arrived at by following the prior description *without the assistance of local knowledge or local prior use* in the locality where the description is published and without experimentation."

In *Hanifen* v. *Godshalk*, 84 F. 649, the Circuit Court of Appeals for the Third Circuit said at page 651:

> "Now, it is a well settled and familiar doctrine that an invention patented here is not to be defeated by a prior foreign patent unless its descriptions or drawings contain or exhibit a substantial representation of the patented invention in such full, clear, and exact terms as to enable any person skilled in the art or science to which it appertains, *without the necessity of making experiments,* to practice the invention. *Seymour* v. *Osborne,* 11 Wall. 516, 555; *Cahill* v. *Brown,* 3 Ban. & A. 580, 587, Fed. Cas. No. 2,291."

Robinson on Patents, Vol. I, page 450, Sec. 329, states:

> "The invention described in the publication must be identical in all respects with that whose novelty it contradicts. The same idea of means, in the same stage of development, as that which the inventor of the later

has embodied, must be thereby communicated to the public. The invention thus described must also have been a complete and operative art or instrument, *ready for immediate employment by the public.* And it must be described, not as a mere hypothesis either in method or in possibility, but as an existing fact already known."

No reference here fulfills these requirements. No publication describes a *"complete and operative art or instrument, ready for immediate employment by the public" or "capable of being put into practical use" "without the necessity of making experiments."*

As stated by the Circuit Court of Appeals for the 2nd Circuit in *Badische-Anilin Co.* v. *Kalle Co.,* 104 Fed. 802, at page 808:

> "The 'description in a printed publication' of the statute is to be found *within the four corners of such printed publication.* Judge Coxe tersely and accurately expresses the law and the reason for it in the following passage:
>
> The question is, what does the prior publication say? not what it might have said or what it should have said. If prior patents and publications can be *reconstructed by extrinsic evidence to fit the exigencies of the case,* the inquiry will no longer be confined to what the publication communicates to the public but it will be transferred to an endeavor to ascertain what its author intended to communicate."

Again in *Loew Filter Co.* v. *German Am. Filter Co.,* 164 Fed. 855 (C. C. A., 6th Cir.), the Court said (p. 860):

> "The Zimmer publication must be given effect as an anticipation only to the extent that it actually gave to the public information of a process of filtration. *It is not competent to read into such a publication information which it does not give, or by expert opinion explain an otherwise uninforming statement* by evidence of some apparatus or article not itself competent as an anticipation. *Badische Anilin & Soda Fabrik* v. *Kalle & Co.,* 104 Fed. 802, 44 C. C. A. 201."

The patentability of the invention in issue is clear, but if there were any doubt it should be resolved in favor of patentability:

> "* * * in case of doubt, complete success in the patent process, as against complete failure or non-user of the other should turn the scale in favor of patentability and non-anticipation."
>
> *Schmertz Wire Glass Co.* v. *Western Glass Co.*, 178 Fed. 990.

> "An admitted success should not be destroyed by an admitted failure." *Cimiotti Unhairing Co.* v. *American Unhairing Co.* (C. C. A., 2d), 115 Fed. 498 (502).

The case of *Seabury* v. *Am Ende*, 152 U. S. 561, cited and discussed at pages 126-127 of petitioner's brief, is destructive of much of petitioner's argument in the present suit, since it establishes that a valid patent *can* be obtained for a product employing boracic acid as an ingredient, notwithstanding the fact, as found by the Court, that boracic acid was old and well known as an antiseptic.

In the *Am Ende* case the Court pointed out that the "merits of the complainant's invention received immediate and wide-spread recognition" and it is apparent from the opinion that this fact had great weight with the Court in reaching its conclusion that the patent was valid.

As to the contentions of the defense that the invention was anticipated the Court said:

> "Undoubtedly the evidence shows that the specific qualities of glycerine and of boracic acid were known, and that these articles had been successfully used in the instances narrated. But we agree with the Court below in thinking that 'this evidence does not disclose that anyone prior to Am Ende *accomplished* what he has described and claimed; that the fact that others had done something quite similar and had used separately, or in different combinations, the ingredients of his claim, should not affect his patent. *All that is described in the prior publications the defendant may use with perfect immunity* * * *."

But in the present case the petitioner is not interested in using the processes or making the products of the prior art. It will be satisfied with nothing but the right to use the particular process and product of respondent's patent.

VII.

The Alleged Prior Uses Are Numerous, Inherently Improbable, and Not Proved.

In spite of the fact that the documentary evidence and the testimony show conclusively that, for more than twenty years the industry had been seeking for some chemical treatment that would control blue mold decay, and that none had been found, the defendant pleaded *ten* prior uses, nine of which it still urges before this Court.

The first comment that occurs in this connection is that there are too many. There must have been recognized defects in each to have induced the attempted duplication.

The next comment which urges itself insistently upon one's mind is that these prior uses cannot possibly have existed, remembering how the whole industry was repeatedly investigated by the Department of Agriculture, and how growers, packers, scientific men and societies were all cooperating with each other, were writing and publishing papers, even engaging in public and private discussions, were in every way searching for some cure for blue mold decay, were trying and rejecting chemical treatment—and during that whole period of twenty-odd years the process now in controversy never came to light. The combing of the industry and of all branches of it had been thorough and complete. No borax process for the control of blue mold existed.

The final comment is that none of the alleged prior uses is proved. The witnesses testify, solely from recollection in every instance, about events which they allege happened many years ago. Even with the best of intentions, memories fade and, therefore, the rule has been established that the proof in such situations must carry conviction beyond a reasonable

doubt, and it is generally held that this burden of proof cannot be sustained in the absence of some contemporaneous, tangible evidence such as that of proved writing or structures. No such evidence exists here.

The testimony of some of the defendant's witnesses may be excused on the theory that they are testifying honestly and to the best of their recollection but that, due to the lapse of time and their present knowledge of the borax mold-inhibiting process, they have confused the use of other chemicals for other purposes with the process now in controversy.

As was said by Judge Mayer in *Kurtz* v. *Blatt* (1920), 263 F. 392, 393, in rejecting testimony of prior use:

> "Mr. Koch was not able to produce any contemporaneous records or exhibits of any kind or description. The subtle influence of mental suggestion to a man's memory after he has seen an article is sometimes difficult for even a man himself to realize."

It is undoubtedly true that some chemicals had been used for some quite different purposes. Thus, Pond of the Eustis Citrus Growers Association, where one of the prior uses is said to have occurred, wrote in 1914 (Vol. II, 1078-9), that in *washing* fruit

> "We use from five to seven pounds of most any kind of washing powder to remove the white fly."

And, in 1915 (Vol. II, 1086), a publication stated:

> "The best outfits *for washing,* now consist of a soaking tank filled with hot water, containing an alkaline cleansing powder, especially where the fruit is black from sooty mold from the white fly. Gold dust or other alkaline powders are now used in the water."

And, in 1917 (Vol. II, 1163), there was a publication stating:

> "Lye, washing powder and *borax* are sometimes recommended *for softening water,* but are not always reliable because they do not neutralize all water-hardening minerals."

With this background, some confusion in the minds of the witnesses would seem to be natural.

The law is that the burden of proof is strongly on the defendant in attempting to prove prior use or prior invention, and every reasonable doubt should be resolved against him.

In *Coffin* v. *Ogden* (1874), 85 U. S. 120, Justice Swayne said at page 124:

> "* * * The invention or discovery relied upon as a defence, must have been complete, and capable of producing the results sought to be accomplished; and *this must be shown by the defendant. The burden of proof rests upon him, and every reasonable doubt should be resolved against him.* If the thing were embryotic or inchoate; if it rested in speculation or experiment; if the process pursued for its development had failed to reach the point of consummation, it cannot avail to defeat a patent founded upon a discovery or invention which was completed, while in the other case there was only progress, however, near that progress may have approximated to the end in view. The law requires not conjecture, but certainty."

In *The Barbed Wire Patent Case* (1892), 143 U. S. 275, Justice Brown said at page 284:

> "* * * We have now to deal with certain unpatented devices, claimed to be complete anticipations of this patent, the existence and use of which are proven only by oral testimony. *In view of the unsatisfactory character of such testimony arising from the forgetfulness of witnesses, their liability to mistakes, their proneness to recollect things as the party calling them would have them recollect them, aside from the temptation to actual perjury, courts have not only imposed upon defendants the burden of proving such devices, but have required that the proof shall be clear, satisfactory and beyond a reasonable doubt.* Witnesses whose memories are prodded by the eagerness of interested parties to elicit testimony favorable to themselves are not usually to be depended upon for accurate information. The very fact, which courts as well as the public have not failed to rec-

ognize, that almost every important patent, from the cotton gin of Whitney to the one under consideration, has been attacked by the testimony of witnesses who imagined they had made similar discoveries long before the patentee had claimed to have invented his device, has tended to throw a certain amount of discredit upon all that class of evidence, and to demand that it be subjected to the closest scrutiny. Indeed, the frequency with which testimony is tortured, or fabricated outright, to build up the defence of a prior use of the thing patented, goes far to justify the popular impression that the inventor may be treated as the lawful prey of the infringer."

In *Deering* v. *Winona Harvester Works* (1894), 155 U. S. 286, Justice Brown said at page 300:

"* * * As we have had occasion before to observe, oral testimony, unsupported by patents or exhibits, tending to show prior use of a device regularly patented is, in the nature of the case, open to grave suspicion. * * * This case is an apt illustration of the wisdom of the rule requiring such anticipations to be proven by evidence so cogent as to *leave no reasonable doubt in the mind of the court*, that the transaction occurred substantially as stated."

In *Eibel Process Company* v. *Minnesota & Ontario Paper Company* (1923), 261 U. S. 45, Chief Justice Taft said at page 60:

"It is true that some witnesses testify that they realized before Eibel's application that speeding up the stock to equal velocity with the wire would solve the difficulty and aid the speed. *But there is not a single written record, letter or specification of prior date to Eibel's application that discloses any such discovery by anyone*, or the use of the pitch of the wire to aid the speed of the machine. The oral evidence on this point falls far short of being enough to overcome the presumption of novelty from the granting of the patent. The temptation to remember in such cases and the ease with which honest witnesses can convince themselves after many years of having had a conception at the basis of a valuable patent, are well known in this branch of law, and have properly led to a rule that evidence to prove prior discovery must be clear and satisfactory."

In *Pyrene Mfg. Co.* v. *Boyce, et al.,* 292 Fed. 480 (3 C. C. A.), the Court said on page 485:

> "It is well settled that evidence of prior use must be clear and satisfactory and in its consideration every reasonable doubt should be resolved against the one raising the question. *Eibel Process Co.* v. *Minnesota & Ontario Paper Co.* 261 U. S. 45, 43 Sup. Ct. 322, 67 L. Ed.—; *Barbed Wire Patent Case,* 143 U. S. 275, 284, 12 Sup. Ct. 450, 36 L. Ed. 161; *Coffin* v. *Ogden,* 85 U. S. (18 Wall.) 120, 124, 21 L. Ed. 821."

In *Douglas-Pectin Corporation* v. *Armour & Company,* 27 F. (2nd) 814, 821, the Circuit Court of Appeals for the Second Circuit said:

> "The defendant relied on proof of prior uses rather than prior patents to establish anticipation and lack of invention and we have discussed the prior uses pointed out upon the argument, as well as some others, at tedious length because it is upon these, if upon anything in its defense, that the defendant could hope to win. The case is not simple or entirely free from doubt, particularly in view of the findings as to the prior uses of the experienced trial judge. *But the situation we have had to deal with shows the soundness of the rule which requires a very high degree of proof in order to establish anticipation of a patent by a prior use. Here the defendant has not offered a particle of written evidence to establish the uses it relies on. Most of them are very old. They deal with a process in which matters of slight detail, such as the degree of concentration of the pectin, the proportion of sugar and the time of boiling are of critical importance and might make all the difference between the old practices and the new invention.* Slight variances due to imperfect recollection of 'old forgotten far off things' and the exaggeration so often seen among honest witnesses induced by their interest or feeling of loyalty, ought not to be allowed to overthrow a patent that has been followed by so much commercial success in a field where no approximation to its teaching can be found among prior patents or publications. *The Barbed Wire Patent,* 143 U. S. 275; *Deering* v. *Winona Harvester Works,* 155 U. S. 286."

Authorities on this point might be multiplied almost indefinitely but the foregoing will be sufficient to remind the Court of the established rule and of the expression of it.

The defendant's evidence falls far short of meeting the requirements of this rule, as both of the lower courts held. There is no tangible evidence of any kind; all is based solely upon the recollection of witnesses whose testimony is in many respects contradictory and in other respects is at variance with prior published statements, and many of the witnesses are, by rebutting testimony, proved to be wrong.

The evidence is not really of such character as to warrant any discussion at all, and, in view of the concurring opinions of the lower Courts and the views expressed by this Court in *The Paper Bag* case, and *Dun* v. *Lumbermen's,* cited at page 6, *supra,* we hardly suppose this Court will care to look into it in detail. However, as petitioner's discussion of the public use testimony appearing on pages 51-62 of its brief seems to us quite inadequate to indicate its real character, we have discussed it further in the Appendix at pages 109-126, *infra,* to which we respectfully refer the Court if detailed consideration of the testimony be deemed necessary.

VIII.

The Authorities Cited by Petitioner Refute Its Contention That the Alleged Prior Uses Are Proved.

A study of the decisions cited by defendant to establish that mere oral evidence will suffice to establish prior use, shows that they do not support defendant's contention that it has proved its alleged prior uses.

These decisions seem to agree that where the oral testimony as to prior use is given by *unimpeached witnesses* of intelligence and experience, *familiar with the art and industry* to which the patent relates, *having no bias or pecuniary interest, and where their testimony is direct, positive and*

distinct as to the facts in detail, with sufficient corroboration, the testimony may be accepted.

In *Sipp Electric Machine Co.* v. *Atwood-Morrison Co.,* 142 Fed. 149 (one of the cases which defendant cites), the Court of Appeals for the Third Circuit set out in detail the testimony of one witness regarding the device in issue, and says "one of them is testified to by Terhune, *engaged for 20 years or more in manufacturing textile machinery* * * * as having been actually used upon a winding machine manufactured for a customer". After reciting in great detail a certain construction described by the witness, the Court particularly calls attention to "the *circumstantial statement of time, place and manner* of construction * * * and the *distinct* and *positive* character of his testimony *as to details.*"

With reference to the decision in *Rodwell Sign Co.* v. *F. Tuchfarber,* 127 Fed. 138, 142, from which defendant quotes at length on pages 68-9 of its brief, we ask the Court to note the sentence which, in the decision, *immediately follows* the portion quoted by defendant and which reads thus:

> *"The case is therefore quite exceptional,* and if the evidence does in fact produce conviction beyond all reasonable doubt, we are unadvised of any rule which denies to it to legal effect in any class of case, criminal or civil."

In none of the cases cited by defendant was there any evidence to contradict the witnesses.

In the present case not one of defendant's prior use witnesses can qualify under the decisions cited by defendant.

Some of the witnesses are themselves infringers of the patent, or connected with the defendant directly or indirectly, and hence the Court cannot say with certainty that they are free from bias.

Others of the witnesses are not persons familiar with the art, and finally, where witnesses are produced who may be said to be experienced in the art, they are impeached by the state of the art itself, as proved by the literature, which shows there was a well advertised demand of long standing for some practical commercial means to stop the mold decay in citrus fruits.

It is incredible that, in an art where information of value is so rapidly collected and disseminated, the alleged successful prior uses testified to by the witnesses went unheralded for so many years.

The petitioner says (pp. 66-7) that the warnings against accepting oral testimony about events long past are applicable only with reference to mechanical devices of complex character; and that "the prior use testimony here is directed to a single fact, namely, the use of borax in the wash water of the several packing houses to prevent or retard the decay of the fruit" and that "there are no details or complications about which the witnesses might be mistaken". Are there not? How about its being borax that was used, and not washing powders; or things called borax powders but containing no borax; or water softeners? How about its being used (whatever it was) to prevent or retard decay? How about the conditions of use "in such manner as effectively to prevent decay or otherwise than as a washing powder" (Opinion of District Court, Vol. I, 19)?

And how about the character of the witnesses, a matter about which the Court of Appeals spoke in the *Sipp* case? (Petitioner's brief, p. 68). How about "Shady" Manning (pp. 116-117, *infra*), who, moreover, was entirely uncorroborated? How about Morgan, who would not look for records (pp. 119-120, *infra*), and his statement to Bauchelle that he did not use borax (p. 120, *infra*)? How about Palmer who could fix no dates, who showed utter uncertainty and unreliability as to all details, and who, although apparently methodical enough to record in a book (hinted at but not produced) purchases of the washing powders he used, evidently had never recorded any purchases of borax (p. 126, *infra*)? How about the character of all of defendant's prior "use" witnesses as contrasted with those of plaintiff in contradiction?

Judge Gray, in the *Sipp* case, held (Petitioner's brief, p. 68) that "the witnesses were in the prime of life, and their testimony direct, positive and distinct as to the fact testified to." That is far from being the case here. The testimony is weak in the extreme, and is not supported by

but is inconsistent with recorded statements in publications, as we have pointed out at various places.

Again, petitioner contends, as to its witnesses, that the use of borax for the purpose of checking decay in oranges was the obvious and natural thing. Can this possibly be true in view of the twenty years of discussion in the industry, of searching and of failure?

Every one of the alleged prior uses is inherently improbable in view of the persistent efforts of the whole industry throughout many years preceding the Brogden and Trowbridge invention to find a remedy for blue mold decay of citrus fruit. The situation is similar to that in *Electric Mfg. Co.* v. *Edison Electric Light Co.* (C. C. A. 7), 61 Fed. 834, where the Court said (p. 838):

> "During a quarter of a century, from 1854 to 1880, *the scientific world was struggling with the problem, and could not solve it;* and yet, if the claim asserted for Mr. Goebel be well founded, it had already been solved, and he had made public demonstration of it in the commercial metropolis of the Union; *the scientific world, however, and the public generally, remaining in total ignorance of it. How he could thus hide his light under a bushel passes comprehension.*"

IX.

Petitioner's Argument in Attempting to Break the Force of Respondent's Publications by Reference to the Pure Food Law Necessarily Rests Upon an Assumption that for Many Years the Department of Agriculture Habitually Misrepresented Facts and Promulgated False Official Statements.

One of the principal arguments advanced by petitioner, here as well as below, in an attempt to offset the published teachings of the Department of Agriculture, is that the experts of that Department, beginning with Powell, well

knew as far back as 1904 that the blue mold decay problem could be solved for the industry by the use of boric acid, but that they did not announce it because the use of such a chemical would violate the Pure Food Law, which, it may be noted, did not come into existence until 1906—two years after the asserted knowledge by the Department, and which never prohibited the application of any chemical to the rind or peel of an orange.

This argument rests primarily upon an alleged disclosure to Powell by a food chemist, Gore, who testified for petitionar at the trial. It is petitioner's contention, notwithstanding its admission that what Gore did was an abandoned experiment (brief, p. 71), that Gore's testimony proves he made successful tests with boric acid on citrus fruit for blue mold decay prevention. We submit that Gore's testimony establishes quite the contrary.

But, if it be assumed that Gore's tests were successful, that Powell was fully informed of them and realized that an effective practical solution of the blue mold decay problem was thus actually at hand, and that this same knowledge was transmitted to Powell's numerous expert associates and successors throughout the long line of those who taught the industry so persistently and insistently for the next twenty years that "careful handling" was the only remedy for blue mold decay in the packing and marketing of fresh fruit, where does that leave the petitioner?

The petitioner's argument disregards some of the very essential facts in which the record abounds. It sounds very plausible to say that, by reason of Dr. Wiley's ideas and the resultant Department policy with respect to the Pure Food Law, respondent's evidence proves merely that "the results of these experiments were never published, never given to the industry, *"for the simple reason that it would have been impolitic to do so"* (Petitioner's brief, p. 71). But Powell and the rest of the army of experts who were engaged throughout that twenty years in trying to find some way to solve the blue mold decay problem for the industry did not stop at merely failing to recommend chemical treatment, or

at offering mere tacit discouragement of its use. *They told the industry that chemical treatment of fruit in preparing it for market was absolutely ineffective to prevent blue mold decay, and furthermore that it would injure the skin of the fruit. Not once was there any mention of the Pure Food Law or the slightest suggestion that the use of chemicals in this way would run counter to any pure food regulations.*

> "I know of no wash yet discovered that will kill the spores of the decay fungus and at the same time not injure the fruit." (Tenny in 1907, Vol. I, 660).
>
> "Do not try to disinfect the water for blue mold. This disease cannot be killed by any strength of copper sulphate or permanganate of potash that would not be injurious to the fruit." (Powell in 1911, Vol. II, 883).
>
> "The question is often asked whether any chemical can be put into wash water to kill the blue mold spores in it or on the fruit. Considerable work has been done along this line and nothing has been found that can be put in the water which will kill the blue mold spores and not injure the fruit. The only thing to do is to keep the fruit free from injury." (Ramsey in 1912, Vol. II, 915).
>
> "As yet no disinfectant has been found which proves effective against blue mold. Extensive investigation of this phase of the subject has shown the spores to be so resistant that any solution used to destroy them must be of such strength to injure the surface of the fruit" (Stubenrauch, Ramsey, Tenny and McKay in 1914, Vol. II, 1011).

The foregoing are merely typical of the statements which the experts made repeatedly down to 1924.

Reduced to its essentials, therefore, the argument offered here by petitioner rests upon what is tantamount to a charge that Powell, Tenny, Stubenrauch, Ramsey, McKay and the other experts of the Department of Agriculture deliberately lied to the growers and packers when they told them year after year in official bulletins and addresses that chemical treatment had been investigated and found useless—and worse than useless because any chemical powerful enough to kill the blue mold spores would injure the surface of the fruit.

If these eminent experts did indeed know that the losses

from blue mold decay from which the industry suffered constantly down to 1924 could satisfactorily be overcome by treatment with borax under the practical conditions of operation prevailing in the packing house in preparing fresh fruit for market, and even if it be assumed that because of Dr. Wiley's views they considered it *"impolitic"* to recommend such a remedy, then it necessarily follows that, in repeatedly and unequivocally condemning chemical treatment and advising against even attempting it, *not* because of any supposed violation of the Pure Food Act by such treatment (for no such thing was even hinted at in any of their publications), but solely because of its alleged utter ineffectiveness, these experts, with the official sanction of the Department of Agriculture, must have been guilty of practicing a barefaced and expensive fraud upon the American people in whose service they were, a fraud which they kept alive by systematic official misrepresentation throughout the better part of twenty years.

We ourselves should regard such a serious indictment of the Department of Agriculture and its experts as quite unwarranted, but petitioner's argument necessarily assumes the contrary. Obviously the only reasonable view is that these highly skilled experts and specialists, instead of being tricksters, as petitioner's argument presupposes, were honest in their published statements and that what they thus told the public was indeed the well considered opinion of the best minds of the industry. Plainly they are disinterested statements by recognized experts, wholly unbiased and free from the more or less natural partisanship of experts testifying in the heat of litigation, and for that reason these statements are more than usually dependable and convincing.

X.

The New Matter Relating to the Department Experiments, Proposed by the *Amici Curiæ* for Consideration by the Court, if Received, Would Further Establish the Highly Inventive Character of What Brogden and Trowbridge Did.

While neither the authorities cited by the *amici curiæ* in their brief at page 45, nor any others known to us, appear to warrant judicial notice being taken of the mass of new matter, digested in the appendix of that brief beginning at page 37 and by this method sought for the first time to be injected into this case, nevertheless it seems appropriate to state that, if this new matter were properly before the Court, it would tend to establish quite conclusively certain important facts, including the following:

The Department did *experiment* extensively with *boric acid* for a long time beginning in 1904, with a view to finding out whether, by its use, it might be possible to control blue mold decay in the commercial handling of fresh citrus fruits. From this it follows that all of the many prior patents and publications of date prior to 1904, relied upon by petitioner, were utterly insufficient to teach even these highly skilled experts in the art that such a thing could be done,—otherwise why the necessity for *experimenting?*

These "experiments" with boric acid proceeded in the laboratory to a point where the method appeared "promising". See Schedule 11, Letter from Scott to Powell, February 6, 1905, in which Scott says:

> "The results of the boric acid test are quite promising.
>
> * * * * * * *
>
> "A 3% strength of boric acid used as a dip seems to prevent the development of the Penicillium rot in oranges and lemons almost perfectly. *I am aware, however, that when brought to actual test in the field and under commercial conditions the treatment may prove worthless,* but the results obtained here in the laboratory are certainly sufficient to warrant more extensive tests."

The necessity for tests under commercial conditions had already been recognized by Powell also, who said:

> "I have not thought of suggesting it *until the boys work a good deal more on it.* Then we may try it on the quiet on a commercial scale." (Letter from Powell to Taylor, Jan. 11, 1905.)

Why wait "until the boys work a good deal more on it" when, according to petitioner's argument, the matter of preventing blue mold decay as described and claimed in the patent in suit was something that any housewife would know enough to do? (Petitioner's brief, p. 50.)

Without going into more detail, it will be sufficient to refer to only one more of these letters, namely, from Powell to Shamel, dated October 26, 1909. Powell says:

> "We have been asked many times to *work out* methods of *killing* blue mold in the wash water for oranges, and two years ago Dr. Wheeler was in Riverside all winter working on the effect of *different fungicides* on the *death* of penicillium. At the end of this work we were *more than ever* convinced we were on the wrong track and the thing to be constantly driven home was the relation of a sound orange or lemon to freedom of decay."

So that, after all the experimenting, the final conclusion was that it was out of the question to try to remedy the blue mold decay troubles of the fruit packer through chemical methods; and this conclusion was based on the definite proof, to the satisfaction of Powell, that the chemicals simply would not work, and not upon any consideration involving the Pure Food Law.

The documents submitted by the *amici curiæ* show that among those who had knowledge of this extensive experimenting and abortive attempt to work out a chemical treatment of commercial value, were Taylor, Powell, Fulton, Scott, Gore, Stubenrauch and Tenny.

It is particularly interesting to note Taylor's letter of January 5, 1905, to Powell, in which he says:

> "Mr. Fulton will keep in close touch with these phases of the work * * *"

Also Gore's letter of the same date to Powell in which he speaks of

> "a discussion of the problems which were brought out yesterday in a discussion of the boric acid work by Messrs. Taylor, Fulton, Scott and myself."

All these men undoubtedly knew about the Department's unsuccessful tests of the boric acid treatment under commercial conditions.

Gore and Scott, who testified for petitioner at the trial, neglected to mention them.

But Tenny had no doubt about them when, in 1907, he said (Vol. I, 660):

> "I know of no wash yet discovered that will kill the spores of the decay fungus and at the same time not injure the fruit."

Nor had Powell, Stubenrauch and Tenny, joint authors of Department of Agriculture Bulletin No. 123, published in 1908, when they said (Vol. I, 709):

> "It has often been suggested that the blue mold might be killed by a disinfectant in the wash water as is done with the parasitic fungus which produces the brown rot. This does not appear from preliminary studies to be promising or advisable."

And in 1910, Stubenrauch recalled those unsuccessful tests very definitely in addressing the Florida State Horticultural Society (Vol. II, 848):

> "We tried a number of these experiments in California, and had a man there one season working on that alone, but we did not get any results that were worth noting."

Even as late as 1925, those failures were evidently still vivid in the mind of Fulton, who, in talking to the members of the Horticultural Society about blue mold and stem end rots, said (Vol. II, 1257):

> "For a long time fruitless search has been made for a satisfactory chemical agent that will control these rots."

The material which the *amici curiæ* ask this Court to judicially notice would therefore seem to show that these skilled Government technologists, to whom the public is rightly accustomed to impute a high standard of integrity, were not guilty of cheating the public for twenty years "for the simple reason that it would have been impolitic" to tell the truth, as petitioner's brief (p. 71) assumes.

XI.

The Experts of the Industry Proceeded for Many Years on the Mistaken Theory that it was Necessary to "Kill" the Decay Spores.

The failure of the Department experts and the industry to find an effective chemical method for controlling blue mold decay in the commercial large scale handling of fresh fruit was probably due to the universal belief that, owing to the extremely resistant character of blue mold *spores*, the only possible hope of treating fruit chemically under packing house conditions to prevent blue mold decay lay in the use of *strong toxic chemicals of positive fungicidal action to kill* the spores. Thus, as is shown by the literature we have reviewed, we find repeated suggestions that copper sulphate, ammoniacal copper carbonate, and the like, were being tried with a view to *killing* the spores. But when used in sufficient strength to kill, these chemicals were found to injure the rind of fruit and, therefore, to be useless. And so the Department announced over and over again that chemical control was hopeless. In view of the exceedingly severe conditions characterizing large scale packing house practice, so favorable to blue mold spore development, and since experiments showed that boric acid would not *"kill"* blue mold spores, it never occurred to anyone then that a mild agent like borax could possibly solve the problem, where active and highly

poisonous fungicides had failed. In view of those failures, how could borax be expected to have any useful effect under practical packing house conditions, with the dirty water in the soaking tank teeming with those highly resistant blue mold spores, and with the washer brushes scratching the fruit and rubbing those spores into every scratch? It was simply unthinkable.

Winston, in his alleged laboratory experiments, says he used mercuric chloride (corrosive sublimate), a strong fungicide and deadly poison, in preference to borax (Vol. I, 217-8). And, of course, Powell *knew* of Gore's unsuccessful and abandoned laboratory experiments with boric acid. Yet neither Gore nor Winston, in their alleged tests, was working under conditions even remotely approaching, in point of severity, the practical packing house conditions just mentioned.

Obviously the idea of spore-*killing* inevitably led directly away from anything like borax for solving the blue mold decay problem of the industry. Note, moreover, that spore-*killing* chemicals could be washed off the fruit after performing their killing function, so that this consideration led away from Brogden & Trowbridge's further idea of leaving a permanent residue of mold-inhibiting agent on the rind of the fruit.

The correctness of this explanation as to why the industry never heard of the borax treatment prior to Brogden and Trowbridge is strongly indicated by the announcement of Fulton and Bowman *in 1924* that they

> "have undertaken the testing of a large number of *mild* chemical reagents with a view to finding *inhibiting* rather than *killing* substances" (Vol. II, 1225).

Thus, *after* the respondent's process became known to the Department, the Department followed that line of work. And *then* it recommended the use of borax. *The Pure Food law did not deter such announcement.* The only sane conclusion is that the Pure Food law had and has nothing to do with the matter. The Department did not earlier announce the use

of borax because it did not know that it would do any good, despite the long search which it had made for some chemical to control decay.

Summary.

1. The patented process is the first successful commercial process for the chemical treatment of fresh fruit to prevent blue mold decay.

2. It has gone into general use in the industry.

3. It has made large savings annually to the industry.

4. The treated fruit produced according to the invention has developed remote markets.

5. For at least two decades prior to the invention in issue there was a continuous and insistent demand for the reduction of the losses due to blue mold decay.

6. Much attention was given to this problem by the experts, including Government experts, in the industry.

7. The conclusion was that chemical treatment was useless, and the only hope for reduction of losses due to blue mold decay was by extreme care in handling the fruit.

8. Notwithstanding earnest efforts to carry out this teaching, the losses still remained too large.

9. The patented invention solved the problem; it introduced a new principle of operation into the commercial handling of fresh fruit.

10. The prior patents and publications relied upon by the defense do not disclose the invention.

11. The defense that no invention was required to devise the process of the patent is an admission that those prior patents and publications do not sufficiently disclose the invention.

12. The contention that the prior patents and publications disclose the invention in issue is contradicted by the litera-

ture and practices of the art, and by testimony of certain of petitioner's witnesses.

13. The alleged prior uses are not proved and are unbelievable in view of the literature and practices of the art.

14. Infringement is admitted.

The whole matter is well summed up in a decision by the Court of Appeals for the Second Circuit, in *O'Rourke Engineering Const. Co.* v. *McMullen*, 160 Fed., 933, 938, where the Court, speaking by Judge Ward, said:

> "The principal question in such cases is: Has the patentee added anything of value to the sum of human knowledge, has he made the world's work easier, cheaper and safer, *would the return to the prior art be a retrogression?* When the court has answered this question, or these questions, in the affirmative, the effort should be to give the inventor the just reward of the contribution he has made. The effort should increase in proportion as the contribution is valuable. Where the court has to deal with a device which has achieved undisputed success and accomplishes a result never attained before, which is new, useful and in large demand, it is generally safe to conclude that the man who made it is an inventor. The court may resort to strict and, it may even be, to harsh construction when the patentee has done nothing more than make a trivial improvement upon a well known structure which produces no new result; but it should be correspondingly liberal when convinced that the patentee's improvement is so radical as to put the old methods out of action."

In conclusion, we ask that the decision of the Court of Appeals be affirmed.

Respectfully submitted,

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APPENDIX.

Detailed Discussion of Prior Publications and Patents.

(a) The Prior Publications:

While, generally speaking, the idea of using borax and boric acid as a preservative *in* food and for some other purposes was old; very curious and contradictory results had been reached in the investigations that are reported. In one case, in connection with cigars, one strength of solution did some good; half that strength did harm; quarter that strength did good again (True, Department of Agriculture, Vol. II, 1503). In 1883, the use of borax for preventing mildew in vineyards (mildew is not closely related to *penicillium*,—Alsberg, Vol. I, 278) was discussed (Journal d'Agriculture, Vol. II, 1506), and again in 1892 (Morel, Vol. II, 1538); but in 1913, it was discouraged as being destructive to foliage (Bourcart, Vol. II, 1523). Incidentally, Bourcart points out (Vol. II, 1448-9) that *penicillium glaucum* (blue mold) is capable of growing in a concentrated solution of blue vitriol (copper sulphate), or on a crystal of silver nitrate, or in a 1 per cent solution of corrosive sublimate; yet these are very powerful reagents. In 1909, in the course of an investigation of the effect of sodium benzoate on mold development in preserved ketchup, other chemicals were tried, and among them (as a "somewhat accidental" matter,—Alsberg, Vol. I, 279) were borax and boric acid, which were found to be less effective than the rest (Bitting, Vol. II, 1510-12). As late as 1922, an investigation conducted by the Department of Agriculture resulted in the conclusion that boric acid is not very effective in preserving canned goods (Circular 237, Vol. II, 1492).

Another article (Bitting, Vol. II, 1525) deals with three molds, none of which is found on citrus fruits. This article is primarily a study, from the purely scientific and labora-

tory standpoint, of the microscopic structural changes produced on the molds in question by a considerable number of disinfectant and preservative compounds employed in various artificial culture media, *i. e.*, different kinds of gelatins and bouillons (p. 1531). It is pointed out (pp. 1531, 1534) that the differing characteristics of the several culture media affected the character of the mold development observed, and the difficulties of exact observation are noted. Boric acid and borax are incidentally mentioned among the numerous reagents tried, but we find no statement anywhere singling out either as noteworthy by comparison with the other reagents. Indeed, there is no indication that the writer had in view anything more than a purely scientific investigation of variations in mold microstructure.

That different cultures and conditions do necessarily govern the action of boric acid (and borax) fundamentally, and make it utterly impossible for the results of any two investigators to agree unless they employ it under precisely the same conditions and in precisely the same culture medium or environment, is further apparent from Folio Microbiologica of 1912 (Vol. II, 1516), which sets forth a "purely abstract investigation", as defendant's witness Alsberg (Vol. I, 280) correctly characterizes it, of the action of boric acid and other compounds. It is pointed out (Vol. II, 1518) that the antiseptic effect of boric acid depends on the medium, and that organic compounds have a tendency to unite with boric acid and impair or impede its inhibiting action. In the recapitulation (p. 1521) it is emphasized that the action of boric acid on the molds in question is dependent on the organic substances present in the nutrient solution.

> "The stronger their combining power, the weaker is the effect of the boric acid."

All this simply means that it was impossible to predict in advance what would be the effect of using either borax or boric acid on the surface of fresh fruit, under the severe conditions imposed by commercial packing operations. The

organic compounds of the skin or rind tissues exposed by injury constitute the medium in which the borax or boric acid and the mold spores find themselves, and until it has been definitely determined under practical conditions what effect these organic compounds will have on the inhibiting action of the borax and on the conditions required to get the desired results, absolutely nothing can be known as to this.

(b) The Bishop, Morris & Parker, de Stürler and Häusler patents:

The type of treatment disclosed by these patents would harm rather than help fresh fruit, as petitioner's own expert admits. Moreover it does not even touch upon the broad problem with which the patent in suit deals. This for the following reasons:

1. The method described in the Bishop patent 683,899 (Vol. II, 1474), so strongly relied upon by both the petitioner (brief, pp. 32-3) and *amici curiæ* (brief, pp. 11-27), is typical for this group of patents. It is primarily and essentially one of encasing fruit or other article of food in an *air-excluding* envelope, that is, hermetically sealing the article of food against access of air. Indeed, the proposed method may be fairly classed as, in effect, merely one way of "canning" food. The initial washing with a solution of boric acid is simply preliminary and incidental to the vital and essential step of sealing the fruit with a gelatin covering "which *excludes the air* and prevents the entrance of atmospheric germs, *thereby preventing decay*". That is, Bishop's idea and teaching was (1) to "kill" all germs, and then (2) to hermetically seal the fruit so that no more germs could get at the fruit and reinfect it.

Complete and air-tight sealing is the very essence of the Bishop disclosure and teaching, the goal of the entire prescribed treatment, which must be viewed as a unitary whole. To omit the step of sealing the fruit air-tight with gelatin, as petitioner contends may be done, is not to follow the teaching of the patent, but rather to ignore it and to defeat

its express purpose. Such destruction of the essential character of a prior art disclosure in an effort to convert it into an anticipation of something not contemplated by its author, violates the fundamental principles of prior art appraisal.

2. But to what *does* the teaching of the Bishop patent actually lead, as a practical matter, if one attempts really to follow that teaching in the treatment of fresh fruit? It leads to the production of treated fruit which is utterly worthless and unsalable by reason of its objectionable physical characteristics, and which, moreover, inevitably spoils *because* of the treatment.

This is conclusively established by the testimony of petitioner-defendant's own expert witnesses, Markell and Alsberg, both formerly of the Department of Agriculture.

Markell, an employee of defendant when he testified, described on direct examination some tests made, presumably, to demonstrate how oranges could be treated by the process of the Bishop patent; but he failed to follow the directions given by Bishop. On cross-examination he admitted that although he first prepared a gelatin solution by dissolving a pound of gelatin in a pint of water (as the Bishop patent directs), he did not coat the oranges therewith because, as he said, it was not at all suitable for the purpose, as the oranges would have been covered with a layer of gelatin from a quarter to a half an inch thick. So Markell, instead of following the directions given in the Bishop patent (designed to seal the fruit air-tight), changed the procedure, as he admitted, *by diluting the gelatin solution eight times.* (Vol. I, 208-9, x-Qs. 80-83, 88.) Even then he got commercially worthless results (pp. 211-2, x-Qs. 102-6). But it was the very thick gelatin solution, prepared as specified in the patent, which Bishop actually used, according to the testimony of his son, Frank C. Bishop, called by petitioner to testify regarding alleged operations under the Bishop patent, principally in treating eggs; and *hermetic sealing* was expressly sought (Vol. I, 181-3).

Defendant's expert, Alsberg, admitted on cross-examination that providing fresh fruit with an *air-excluding* coating will cause fruit to spoil (Vol. I, 301-3, x-Qs. 85-93). Incidentally, he sharply distinguished between the treatment of other articles of food, such as eggs, and the treatment of fresh fruit, stating that "you cannot compare an egg with an orange" (p. 304, x-Q. 97).

Petitioner (Brief, pp. 55-56) and the *amici* (Brief, pp. 12, 19-21) contend that respondent's optional step of following the borax treatment by an application of paraffin (described and recommended in the patent in suit but not involved in any of the claims in issue) is the same thing as Bishop's hermetically sealing coating of gelatin; that if Bishop's coating would cause fresh fruit to spoil, so also must respondent's coating; and that, accordingly, respondent is in no position to attack the operativeness and utility of the Bishop disclosure.*

This contention ignores the facts of record amply refuting it.

The specification of the patent in suit very particularly prescribes (Vol. I, 593) that the paraffin, or like waxy material optionally applied to reduce the normal shrinkage or withering of the fruit and to maintain it plump, shall be

> "in such condition that it can be spread all over the surface of the fruit to produce *an extremely thin protective film which is not noticeable except by the expert eye and does not interfere with the so-called breathing or transpiration of the fruit to an undesirable extent* • • •"

and the specification further describes (pp. 595-6) exactly how this kind of a coating may be produced by atomizing a small amount of a composition (consisting of paraffin mixed with a larger proportion of an oil) upon each fruit and then passing the fruit over rapidly rotating brush rolls which

* In this connection petitioner's brief (p. 56) makes a misleading reference to a 1921 advertising circular (Vol. II, 1464) with which respondent had nothing to do, and which does not relate to the paraffin coating described in the patent in suit (see pp. 57-58, *supra*).

rub and film the composition out over the fruit surface "to produce a protective coating of the desired extreme thinness". The coating step thus described has been commercially used in conjunction with the borax treatment by many of respondent's licensees on a very large scale with uniformly good success, as their testimony in this suit abundantly proves (*e. g.*, Vol. I, 43-46, 56, 58, 73-76, 81-84, 87-89). But it is not at all an hermetic seal; it still permits the fruit to "breathe."

3. The Bishop patent mentions no specific fruit or vegetable which it is proposed to treat. In particular, it nowhere mentions treating *fresh fruit*. The fruit which it is proposed to treat may well be dried fruit, such as prunes, for example, for it is of course desirable to prevent decay of dried fruit. But since the marketing of dried fruit does not involve the necessity of getting the fruit to the consumer in as nearly as possible the fresh unaltered condition in which the fruit leaves the tree, the problem is quite distinct from that of preparing fresh fruit for market, and much less difficult, because fresh fruit "breathes" and must continue to breathe or else cease to be fresh.

4. But, apart from the foregoing, and aside from the failure of the Bishop patent to mention fresh fruit, the problem dealt with and solved by the patent in suit is not even broadly touched upon by the disclosure of the Bishop patent.

The patentees of the patent in suit consciously and deliberately attacked the problem of rapid, large-scale handling of fresh fruit in the mass under the severely adverse conditions necessarily prevailing in commercial packing houses where fresh fruit is prepared to be marketed as such. As the record abundantly establishes (Vol. II, 994-5, 1104-5), the operations of picking the fruit, hauling it to the packing house and causing it to travel rapidly in large volume through an elaborate system of washing, drying and conveying apparatus necessarily and inevitably result in a large proportion of the fruit being wounded in greater or less degree, that is, those operations necessarily give rise to "exposed

rind tissues", to use the phraseology of the patent in suit. In the rapid passage of enormous volumes of fruit through the modern packing house, it is utterly impossible to pick out and discard any but grossly wounded fruit and this constitutes but a small part of the total amount of fruit which is mechanically injured in one way or another and is therefore characterized by "exposed rind tissues". It is these "exposed rind tissues" which render fresh fruit susceptible to attack by blue mold spores. Without "exposed rind tissues", fruit is in no danger from blue mold decay (Vol. I, 624-5, 638; Vol. II, 992-3), and hence the problem solved by the invention of the patent in suit, does not even arise.

Wholly silent as to the character of fruit proposed to be treated; and utterly barren of any reference to blue mold decay or the problems peculiar thereto, this Bishop patent disclosure is generally comparable in its underlying thought and principle of operation to others of that period, such as the patents to Morris & Parker (Vol. II, 1563) de Stürler (p. 1566), and Häusler (p. 1601), which stress as a vital necessity the complete isolation of the article of food from atmospheric influences by sealing its surface *air tight* with the aid of one or another sealing composition. Thus, Morris & Parker recommend encasing fruit in a tough and elastic envelope of a gelatin composition for the purpose of sealing the fruit against access of air and thereby preventing infection by germs. They embody borax and other ingredients directly in the gelatin composition. *They expressly point out the futility of attempting to apply such a treatment to any but perfectly sound fruit "free from the slightest bruise"* (p. 1565). Bishop obviously thinking along the same general lines as Morris & Parker and merely modifying their method in details, evidently shared the views of these contemporaries of his. It was the thought of that period that it would be foolish to treat by special processes of this kind any but carefully selected and perfectly sound fruit, and naturally Bishop had no intention of attempting to treat any fruit not perfectly free from injury. If there were otherwise any doubt on this score, it would be completely dispelled by the testimony of petitioner's witness,

Frank Bishop, referred to hereinabove, who testified (Vol. I, 183) that *in treating fruit by the process of the Bishop patent it was the practice to pick out and discard any blemished fruit and to treat only the very best fruit.*

Hence, even disregarding the absence of any reference to fresh fruit in the Bishop patent, and assuming for the sake of the argument that it does propose to treat fresh fruit, the patent certainly does not teach treating fruit having "exposed rind tissues", quite the contrary. For Bishop, like such other of the cited prior patentees as can be considered to be dealing at all with the problem of treating fresh fruit to maintain it in its original fresh condition, particularly saw to it that the fruit to be treated was carefully selected so as to be perfectly sound and free from bruise, blemish, or mechanical injury of any kind.

The teaching of these prior patents, including Bishop, is therefore diametrically opposed to the invention of the patent in suit and leads directly away therefrom. The invention in suit is based fundamentally upon the express *acceptance, as a fundamental working basis,* of the following well established propositions:

(a) That the greater part of any given quantity of fruit handled under modern large-scale commercial packing methods must inevitably suffer mechanical injury to some extent in spite of all preventive precautions, with the result that on the surface of such greater part of the fruit there are always "exposed rind tissues".

(b) That this "mine run" fruit, notwithstanding its vulnerability to blue mold spore attack at those points where the rind tissues are exposed by mechanical injury, must nevertheless, as a practical matter, pass through washing tanks, brushing machinery, dryers, and other packing house equipment, literally teeming at all times with blue mold spores (Vol. II, 688, 709).

It is this problem, "peculiar to commercial large scale methods of handling fruit" (Vol. I, 573), which the Courts below accurately perceived to be the special problem dealt with and solved by the invention of the patent in suit.

It is this problem and its solution by the invention of the patent in suit which the Courts below had no hesitation in finding were not touched upon by the prior art, although this Bishop patent, among others, was strongly relied upon by petitioner and discussed at length in the briefs and oral argument before both the District Court and the Court of Appeals.

The De Stürler patent teaches the same general procedure recommended by Bishop, namely *killing* (sterilizing) the germs and then hermetically sealing the fruit air tight.

The Häusler patent advises the use of a viscous "antiseptic" coating mixture of gelatin and glycerine containing boracic acid, by which the article of food is "entirely isolated from atmospheric influences" (p. 1602).

Both the De Stürler and Häusler disclosures, besides thus insisting upon the destructive *air-excluding* covering, are also foreign to the invention of the patent in suit in the other respects discussed above in connection with Bishop.

The teaching actually afforded those skilled in the art by the above group of patents is therefore plainly not that of the patent in suit, but a teaching directly opposed thereto and leading away therefrom. The resemblances which those earlier disclosures of food "embalming" are alleged to bear to the invention in suit (see especially *amici curiae* brief, p. 20) are like those referred to in *Consolidated Valve Co.* v. *Crosby Valve Co.*, 113 U. S. 157, 171, where in speaking of alleged resemblances between supposed anticipating patents and the invention there in suit, this Court said at page 171:

> "In regard to all of the above patents, adduced against Richardson's patent of 1866, it may be generally said, that they never were, in their day, and before the date of that patent, or of Richardson's invention, known or recognized as producing any such result as his apparatus of that patent produces, as above defined. Likenesses in them in physical structure, to the apparatus of Richardson, in important particulars may be pointed out, but it is *only as the anatomy of a corpse resembles that of the living being.*"

(c) **The Storer British Patent:**

Storer, in his British patent 214 of 1888 (Vol. II, p. 1598), proposes to saturate material such as sawdust or chaff with a solution of boracic acid or an alkali borate or biborate, then to *thoroughly dry* the sawdust or chaff, and then to pack fruit in the *dry* treated material. It is sufficiently obvious that such a procedure would entirely fail to impregnate exposed rind tissues with the reagent used, even if it were intended to treat any but perfect and uninjured fruit (which is not suggested), and would therefore be wholly ineffective to prevent blue mold decay.*

(d) **The patents to Spear, Gahn, Fagersten and Hauff:**

These patents obviously relate to *food preserving* processes proper, such as canning, pickling or otherwise incorporating a preservative of some kind *in* food. They are therefore even more remote, if possible, from the invention in suit than the patents already discussed. None of them touches in any way upon the subject of blue mold decay or the problems involved in its control in the commercial marketing of fresh fruit. They will, however, be briefly discussed.

Spear, in his very old U. S. Patent 67921 of 1867 (Vol. II, 1538), preserves *animal* matter by placing it permanently, until used, in a preservative solution of borax neutralized by sulfurous acid gas; he preserves *vegetable* matter in a solution of sulfurous acid in combination with an alkali and water (which solution he says may also be used for embalming human bodies). And in preserving fruits and vegetables, he *cooks* them before putting them in the solution.

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* The inoperative and useless character of the process disclosed in this British patent to Storer is further indicated by the testimony of defendant's witness Alsberg that "these articles which are preserved with borax or boracic acid are liable to soften and get a brown crust over the outside *if they are packed dry in borax, as some of these patents provide*" (Vol. I, 285).

Gahn, in his ancient U. S. Patent 161944 of 1875 (Vol. II, 1546), proposes a new composition whereby "all kinds of raw food, fruit, and other vegetable products may be *preserved* for a longer time, and in warm climate". His composition consists of boracic acid *and alum*, preferably with sugar in it. He says it may be used in powdered state by rubbing or sprinkling it "over layers of the substance to be preserved". Or he may use it in liquid state, in which case "the substances to be preserved have to be dipped or immersed into the liquid". For this solution he uses from "8 to 10 ounces of the powder to one gallon of water, or as much as the water will dissolve".

It is impossible to gather from the patent specification just what form of preserved fruit would result from the procedure, but taking the description as a whole it seems fair to infer that the patentee has in mind either getting as his final product a dried fruit *containing* the preservative, or else that he has in mind an ordinary pickling or canning procedure, alum being a common pickling agent. (Petitioner's expert Alsberg, Vol. I, 285). At all events there is nothing to indicate that the patentee is dealing with the problem of getting fresh fruit *as such* into the hands of the consumer, and it is certain that he could not do so by such procedure as is disclosed in the patent; for, as Dr. Alsberg explains, the effect of the alum in the composition is to tan and harden the tissues of the article of food to which it is applied. This in itself would of course radically change the nature of fresh fruit undesirably; but more than that, this tanning or toughening effect upon the tissues would also obviously prevent or impede proper penetration of the boracic acid into the exposed rind tissues if, as is not suggested in any way, the solution were to be applied to surface wounded fruit.

The patent in suit particularly warns against the use of such material as alum, as follows:

> "The solution should not contain ingredients substantially diminishing its fluidity *or otherwise interfering with ready penetration* of the solution into exposed rind or skin tissues" (Vol. I, 591; lines 18-21).

All this sufficiently indicates the utter irrelevancy of this cited patent without going into the further consideration that boracic acid and alum in water solution undoubtedly interact with formation of various products of indeterminate nature. Sugar, when used, would be another complicating factor to render the solution syrupy and interfere with proper penetration thereof into the exposed rind tissues. The mention of sugar is, moreover, further evidence that the patentee's intent is to *preserve* in the usual sense of the word, and not to keep fresh fruit in unaltered fresh condition.

Fagersten, in his U. S. Patent 221,541 of 1879 (Vol. II, 1552), deals with the prevention of mold upon cured meats, more especially hams and shoulders. "It is proposed to immerse or dip the meats in a solution of boracic acid at boiling heat, but the solution may be used with success if slightly varying therefrom, so long as it is hot." After this treatment the meat is smoked (see claim).

There is of course no mention in this patent of treating fruit, and the procedure laid down would obviously ruin any fruit intended to be marketed in fresh unaltered condition, which is the problem solved by the patent in suit.

Hauff, in his U. S. Patent 234,567 of 1880 (Vol. II, 1554), proposes to provide a *preserving* compound alleged to result from mixing boric acid and borax, dissolving the mixture in water and finally evaporating the solution to dryness. Hauff states that the antiseptic or preserving qualities of boric acid or borax are well known and he seems to be quite sure that these are due entirely to the boric acid content. However, the use of boric acid in dry condition is not very satisfactory he says, and as boric acid is not as soluble as would be desirable, he wants to get it into more soluble form. Hence his combination of boric acid and borax.

He does not disclose specifically any material which he intends to preserve, but simply refers generally to preserving animal and vegetable substances. Nor is any method of treatment described. It is fair to infer that Hauff merely has in mind preserving methods in the nature of canning or pickling.

Detailed Discussion of Prior Use Testimony.

The Bishop "use":

In our discussion of the Bishop patent (pp. 99-104, *supra*) we have shown that the Bishop process, whether it was ever actually used or not, is not that of the patent in suit and, besides, would be harmful to fresh fruit. Under the present heading, it remains only to point out from the testimony of Frank C. Bishop, the sole witness regarding this "use", that

1. If there ever was any attempt to treat fruit by the Bishop process, it was only in a very small way, irregularly and at times not definitely established. The treatment of eggs (a wholly different matter from oranges, Vol. I, 304, 1. Q. 97) was the main thing (Bishop, Vol. I, 177-179).

2. Such sporadic attempts as there were to treat a little fruit now and then were conducted, *not* at the place of business where the eggs were treated, but in a room next door to the Bishop residence in another part of San Francisco, thus further indicating their purely experimental character (p. 179).

3. The witness knew nothing about blue mold, and his father (the patentee) never discussed blue mold with him, although the witness was his father's helper (p. 181).

4. The witness had no idea whether the treated fruit kept or not, or even what became of it. He never made any observations himself as to its keeping qualities and knew of none by his father (p. 183).

5. The testimony therefore does not support the statement in petitioner's brief (pp. 54-5) that for several years a company in San Francisco was engaged in the *business* of treating oranges and other fruit by the process of the Bishop patent.

The Pond "use":

Pond was associated with two packing houses, one at Eustis and one at Tavares.

Of the six witnesses offered to prove the Eustis use, none except perhaps Robinson pretends ever to have put borax in the tank, or to have seen it put in by any one else; and none, including Robinson, *had any recollection whatever as to the amount of "borax" used.* Although Robinson was foreman of the Eustis house, he does not even recall whether it was used through the two seasons he was there (Vol. I, 470). But later, when he managed another packing house, *he used bluestone and precooling in an effort to reduce decay* (p. 471), which is rather odd if he had really learned from Pond how to stop decay with borax. And when he went back again to work for Pond, borax was not used, but merely some washing powder (p. 472), so that if Pond ever did try borax he evidently abandoned it.

Another witness, Sandlin, who talked volubly about Pond's alleged success with borax, wrote a lengthy article published in 1921 (Vol. II, 1442) stressing the vital necessity of doing everything possible to reduce decay and preaching careful handling,—but not one word about borax. That is strange, too. His memory about that was evidently better at the trial of this case in 1927 than it was in 1921.

Likewise Dupree, although he asserts that Pond told him how to reduce decay and although since that time he has always been a manager of a packing house and has tried to reduce decay by the use of chemicals, *did not use borax until 1927.* Dupree markets his fruit through the defendant company. (Vol. I, 197-200).

Even if Pond had used borax, it would all have been washed off the fruit by the Limoneira washer which followed his soaking tank (Vol. I: Robinson, 472; Harris, 196; Miller, 501-2; Boone, 348; L. B. Skinner, 309; B. C. Skinner, 320). As defendant's witness Harris testified, water was run on the washer brushes "so as to get everything off the surface of the orange" (p. 196).

Furthermore there is no evidence that any beneficial results followed Pond's alleged use of borax. There is some general testimony, totally unsubstantiated by records, that his fruit carried well, but it is not shown that this was due to using borax. There is abundant testimony, however, that he was a fanatic about "careful handling" (Vol. I: Harris, 195-6; Robinson, 472; Miller, 504); so that, with his excessively careful handling, his fruit might on that account have suffered little decay.

Plaintiff's witness Boone, who personally looked after the soaking tank and washer and the handling of fruit therethrough under Robinson (Vol. I, 472) declared that nothing but washing powder was added to the water in the soaking tank and that no borax or boric acid was used (Vol. I, 348-9); and this is corroborated by McIntyre who saw much of Pond and frequently discussed decay with him and the use of chemicals, yet never heard Pond mention borax (pp. 316-7), although Pond was the type of man likely to talk much about such a matter, according to defendant's witness Robinson (p. 472).

Defendant's witness Harris testified (Vol. I, 193-4) how upon one occasion he showed "thousands" of people through Pond's packing house and explained the use of borax to these "great swarms" of visitors, including packers, government men, and also newspaper men who gave the packing house good write-ups although none of them talked about borax (pp. 194-5). Is it conceivable that, with the industry eager as it was for such information, if these "great swarms" of men in the industry had been told that borax would reduce decay, this information would not have left its mark somewhere in the industry? We have only to look at the epidemic of articles on the borax treatment which appeared in 1925 after respondent's development work in California became known to see what effect such an announcement would have had.

Although defendant failed to produce a single witness from among those "great swarms" whom Harris says he

told about Pond's use of borax, plaintiff's witnesses, L. B. Skinner and B. C. Skinner, who were present on that same occasion and talked with Pond, one of them being "right near Mr. Pond when he was explaining the machinery", testify that Pond never mentioned borax in *any* connection, either then or on any of many other occasions they talked with him (Vol. I, 308-9, 318-9). Moreover, Harris testified that, although he had to do with purchasing for the Eustis house, he does not remember purchasing any borax, nor does he even remember any bills for borax (p. 194).

Regarding the Pond "use" at Tavares, Miller was the sole witness. He was altogether hazy as to the amount of "borax" used, but his estimate of "perhaps somewhere between five and six or seven pounds" (p. 501) put into the large vat or tank of ample dimensions (p. 500) shows the concentration to have been negligible at all events. If borax really had been used in such quantity, it would have merely acted to soften the water and thereby eliminate itself. In any case, regardless of the concentration, everything was subsequently completely washed off the fruit by the thorough washing with plain water in the washer into which the fruit went from the tank (p. 501).

Booth, manager at the Tavares house, flatly contradicts Miller and testifies that no borax but only washing powders were used there; also that if borax had been used, the books of the association would show the purchases (p. 557). *No books were produced by defendant.* And Booth's denial is corroborated by a published address of Dr. Sadler, a member of the Tavares Association, in 1914 and 1915, in which he describes a drying system installed by himself and the manager, Booth, in that packing house and gives figures to show the reduction in blue mold decay *due to this drier* (Vol. II, 1061, 1087-9). If the blue mold decay problem at Tavares had been solved by borax, Dr. Sadler would hardly have failed to mention it in his addresses. And Pond himself, in an article published in 1914 (Vol. II, between pp. 1078 and 1079), says not a word about borax but states he uses "most

any kind of washing powder to remove the white fly", and attributes his success to the efficiency of his Limoneira washer.

Yet petitioner asks this Court to believe that Pond knew and had been publicly using with great success, both at Eustis and Tavares, the invention of the patent in suit.

The Thompson "use" at Tavares:

Here, as in the other alleged uses, the testimony abounds in inconsistencies and uncertainties. Thompson could not even fix his period of employment definitely (Vol. I, 506); but he was positive he came to Tavares *"after Mr. Pond had left"* (p. 509). Now defendant's witness Miller testified that borax was not used at the Tavares house after Pond left (Vol. I, 503), thus contradicting Thompson and corroborating plaintiff's witness Booth, under whom Pond and Thompson successively served, and who denied that borax was used at Tavares (pp. 557-8). Thompson did not even know whether the "borax" had reduced decay or not (pp. 506-7).

There is no corroborating evidence, documentary or otherwise, of this alleged Thompson use. Furthermore, Thompson alleges the suggestion to use "borax" came, not from Pond, but from one Watson of the Florida State Experiment Station (p. 506). He also refers to a foreman, Boyd, who he alleges knew all about his using borax (p. 507). Neither Watson nor Boyd (note that Boyd was included among the prospective witnesses named in defendant's testimony notice, Vol. I, 526) was called, nor was the failure to call them excused. The usual unfavorable presumption attaches.

The B. F. Chilton "use" at Ronnoc Groves:

The alleged uses at Ronnoc Groves are entirely unproved. There is absolutely no record of the use of borax, and the testimony of the defendant's witnesses is inconsistent and palpably false, and is directly contradicted by the plaintiff's

witnesses who were in much more responsible positions at Ronnoc Groves.

Ronnoc Groves was the general name given to a fruit plantation at New Smyrna, Florida, owned by Washington E. Connors, a business man of New York City. The entire plantation was divided into three "groves", which were known as "Home Grove", "Jungle Grove" and "Osceola Grove". There were, however, only two packing houses in the plantation, the oldest one being the "Home Packing House", the "Jungle Packing House" not having been built until 1906.

H. F. Chilton, now deceased, was Mr. Connors' local superintendent and manager.

In an attempt to prove use of borax at the Home house the defendant took the depositions of H. F. Chilton's son Kirby, who worked as a bookkeeper in the office at the time of the alleged use, and of Gus Taylor and Jonas Meeks, negro laborers and roustabouts. The plaintiff's witnesses McCorkle, Ballantyne and Hart directly contradicted this testimony.

Kirby Chilton did not testify to ever having seen any borax put in the tank of the washer, or to ever having seen any borax in the packing house; he had no idea where the borax was obtained and stated that he did not know how much borax was used (Vol. I, 475; 478-9).

However, the negro roustabout, Gus Taylor, desired to have it understood that *he* knew a great deal about the use of borax. His memory was in such good working order that he could recall using *thirty pounds* of borax and *one and a half packages* of washing powder *"when the oranges were real dirty"*, and less when they were not. His mind just would insist upon reverting to this matter of *cleaning* the fruit, notwithstanding he was supposed to remember that borax was used to stop blue mold. In order to make a real good story of it, he had Chilton buying borax *three waggon loads at a time*, but his mind was a blank as to where Chilton got it (Vol. I, 483-4). So also was Kirby Chilton's, apparently, although he was the bookkeeper.

Jonas Meeks, another negro laborer ("forty-nine years old and ready to step out"—Vol. I, 480), stated that "Mr.

Chilton used some borax, one thing, *he used*". He did not know what Chilton used it for, or how long it was used, or how much was used. The only way he understood it was borax was because he thinks Mr. Chilton said so. Jonas had no personal knowledge whatsoever about any use of borax (p. 480).

From 1907 until 1911, McCorkle was foreman of the Home Grove packing house (R. I, 436). During that time McCorkle (called by plaintiff) testified that occasionally washing powder was used, but that apart from that *nothing else was ever used in the wash water*, and no chemicals were ever sprinkled around the bins (Vol. I, 357). McCorkle had charge of the grading, packing and washing (p. 359). He was responsible for the handling of the fruit from the time it came unwashed from the groves until it left in the packed boxes. And this man, who was responsible for the washing and handling of the fruit during the period to which Gus Taylor refers, *definitely states that nothing but washing powder was ever used in the wash tank*.

McCorkle is corroborated by Ballantyne and Hart.

In 1907, Connor, the owner of Ronnoc Groves, being much dissatisfied with the results obtained at the Home Packing House, turned for advice to his neighbor and friend William S. Hart, who obtained higher prices for his fruit than anyone else in Florida due to his extreme care in picking, handling and culling. He never used borax for any purpose and rarely used washing powders (Vol. I, 405, 529, 533, 541). It was arranged that Hart should send his men over to the Home Grove nearby to take charge of the packing house and instruct Connor's men in the proper methods of handling fruit. Ballantyne and some helpers were therefore sent over to the Home packing house, and remained there for 10 days, having entire charge of the house in order to introduce Hart's methods of handling fruit (pp. 405-6, 534-6). Ballantyne proceeded to improve the picking methods, put new lining in the washer, cleaned up the packing house, and in general instituted and maintained Hart's careful method of picking and packing during those ten days. *During that entire time*

he never found any chemicals in the place and never used anything but sponges and plain water in the washer (p. 406). Ballantyne installed Hart's methods of extreme care in handling and then left. Ballantyne recalls Gus Taylor as a darky who was picking fruit in Connor's grove and who was saucy to Ballantyne when the latter went out into the grove to check up on the work of the pickers. Also, Gus was *not* working in the packing house (p. 407).

It is quite obvious that Gus Taylor's testimony is an utter fabrication. If hundreds of pounds of borax a month had been used, surely Kirby Chilton, the bookkeeper, would remember where such large quantities were obtained, and there would be some records of such purchases. And yet Chilton had no such recollection (p. 479) and no such records have been produced. *The fact that the defendant introduced in evidence letters from Mr. Niles to Mr. Connor written in 1909 (Def. Ex. 44 and 45) makes it evident that the owner of Ronnoc Groves was business-like and careful in keeping old records. And yet not one letter or bill or record of any kind relating to borax has been brought forth. The deduction is evident that no such records exist because there was never the basis for such records. The use of borax at the Home packing house is a figment of Gus Taylor's artificially stimulated imagination.*

Coming now to the "use" at the Jungle Packing House, the defendant took only the deposition of "Shady" Manning; while the plaintiff called the three foremen who were in charge of the packing house during the period in question, Niles, McCorkle and Clifton, and two women who worked as packers in the house during that period, Mrs. Laura Crews and Mrs. Carrie Tanner.

Manning's full name is Shadrach Manning. Niles testified that when Niles was being interviewed before the trial by the representatives of the defendant, Niles said to them "do you boys know this man Manning?", and that thereupon one of the representatives, Mr. Skelly, "winked at me and said 'they call him Shady for short'" (Vol. I, 403-4). That de-

fendant's representative Skelly made this statement to Niles *has not been denied.*

Manning's testimony is indefinite, totally uncorroborated, and not substantiated by any records whatever. Furthermore it is directly contradicted by the plaintiff's witnesses and shown to be utterly false in all material respects.

"Shady" states that he was "general foreman of the packing house" at Junge Grove, in full and direct charge of all the packing house operations, including washing of the fruit, and he asserts that this continued right up to the time he left in 1913 (pp. 514-6, 520, 522-3). This is absolutely untrue. Shady was never foreman of the packing house, and indeed was not allowed in the house. From 1909 to 1911 Niles was foreman (Vol. I: Niles, 375-6; McCorkle, 356, 360; Clifton, 367-8; Mrs. Crews, 551; Mrs. Tanner, 553-4); from the Spring of 1911 to the end of that season, McCorkle was foreman (McCorkle, 355; Clifton, 366; Mrs. Tanner, 554); and from the end of the 1911 season until 1914 Clifton was foreman (Clifton, 366; Mrs. Tanner, 554). These facts are established by the plaintiff's witnesses beyond a shadow of a doubt.

"Shady" Manning was never in a position of authority as far as concerned handling or treating the fruit after it was picked. While he was at Ronnoc groves his business always was "looking after groves", and since that time it has been the same for, as he himself states, he is not familiar with present day methods of packing house operation and equipment, his business for years having been to look after the groves and supervise the men who "prune, hoe, cultivate, harrow, tractor, spray, dust" (p. 524).

"Shady" was wholly indefinite as to *when* he began using borax,—"I don't just remember when that was" (p. 515); or how long such use continued, or how much was used (pp. 515-6).

In flat contradiction of these shifting, indefinite statements of a man whose business it was merely to work in the grove, and who had nothing whatsoever to do with the wash-

ing of the fruit or the management of the packing house, we have the clear testimony of each of the three foremen of the Jungle packing house from the time its practical operation began in 1909 until 1914, a year after "Shady" had left Connor's employ, and *each of these men definitely states that no borax was ever used in the washer of that house, nor was there ever any borax solution "sprinkled around"* (Niles, Vol. I, 374-5, 380; McCorkle, 357, 363; Clifton, 366-7).

It is quite obvious that if borax had been used in either the Home or Jungle packing house Hart would have known of it. It is also highly significant that Connor was not called to testify by the defendant, even by deposition. It is incredible that a business man like Connor would not have full records of his Florida grove and packing house business, and that such records would fail to substantiate this alleged use of borax if it really occurred. The whole story is obviously pure fable.

The Barnes "use":

This use is alleged to have occurred at a packing house at Ocala, Florida, in a "Nye" washer, a type of washer in which *fresh water is continuously supplied* to the tank to replace the *water being continuously carried out* by the peculiar moving belt system of brushes employed (Vol. I, 189, 319, 324, 511).

Barnes says he put *a pound of washing powder and a pound of borax* in the tank every morning, and the tank was washed out every night. He admits that he did not then know about borax what is known now, but he *now* feels "satisfied that the borax had something to do with the carrying of the fruit" (p. 512).

This testimony of Barnes, the sole witness for this "use", stands absolutely alone and uncorroborated. But even assuming that he did use borax in the Nye washer as he testifies, and taking the tank and water measurements he gives, the alleged borax solution would have had a strength of only fifteen hundredths of 1%—negligible for mold-inhibiting pur-

poses; and this would have to be on the further assumption that no more water was run into the tank and also that the "borax" was not used up and precipitated by softening the water. But water was constantly being carried out of the tank by the traveling belt of brushes, and fresh water was constantly flowing in through the open supply spigot to keep up the level in the tank; so that, after a few minutes running, the borax would have disappeared completely anyway.

The Morgan "use":

Of all the ten pleaded prior uses Morgan is the only alleged prior user who testified in person at the trial in this case. His testimony of his use of borax to reduce decay stands alone and uncorroborated, although an unsuccessful attempt at corroboration was made in taking the deposition of Wood, one of the four foremen whom he employed at various times during the period of his alleged use. *It is significant that none of the other three foremen was called.*

Not only does Morgan's testimony stand uncorroborated, but it is so unlikely on its face and of so weak and inconclusive a character, absolutely unsupported by any record whatsoever, that it falls far below sustaining the heavy burden of proof required of a party trying to prove prior knowledge or use. Morgan had previously given a deposition in California and both then and at the trial, he was asked to produce any bill, receipt, memorandum or other record which contained a mention of borax or the use of borax and he was unable to find any *prior to 1925* (Vol. I, 159-170). At the time of taking the deposition he made a brief search of his records for the mention of borax and the only things he could produce for the years prior to 1925 were statements from Needham Brothers for small amounts "To bills rendered" (Pl. Ex. 79, Vol. II, 1435, fols. 880-882). Nothing appeared on these statements to indicate that they were for purchases of borax.

However, coming to 1926, Morgan produced a bill for a ton of borax (Plf.'s Ex. 80, Vol. II, 1435, fol. 883), *and he*

"just could not tell" when he made his next preceding purchase of borax (Vol. I, p. 179, l. 8 fr. bot.).

Although pressed by plaintiff's counsel to produce records in his California deposition, Morgan testified at the trial that he had made no further search (p. 174), from which it is fair to infer that no such record exists. As Judge Learned Hand said in *H. Mueller Mfg. Co. v. Standard* (2 C. C. A., 1910), 184 Fed. 609, 613:

> "There must always be doubt in the mind of the Court when no effort is made to produce in evidence facts, the existence of which may reasonably be inferred from the record in the absence of any excuse for the omission. In such case the prior use cannot be said to be established beyond a reasonable doubt."

Likewise the Circuit Court of Appeals for the Second Circuit said in *Greenwald Bros., Inc. v. La Vogue Petticoat Co., Inc.*, 220 Fed. 448, 453:

> "It is clearly unsafe to rely upon the testimony of witnesses depending entirely upon memory of contemporaneous facts long past and uncorroborated by any recorded data. The evidence on this matter is fatally defective, in that it absolutely fails to fix with sufficient accuracy the date of the alleged anticipating manufacture and sale. *The cross-examination of defendant's witnesses disclosed the fact that no effort had been made to look up books, memoranda, or any contemporaneous records for the purpose of fixing the date of the use now claimed to have been prior to that of the patent in suit.* The character of the evidence offered on this subject is quite unsatisfactory and unconvincing."

But, apart from the general weakness of Morgan's testimony, we have a clear refutation of it by the statements of the plaintiff's witness, Banchelle, for Morgan had distinctly informed him in 1926 that he, Morgan, did *not* treat his fruit with borax (Vol. I, 326-7, 333, 336); and Morgan repeatedly testified that his methods have not changed since 1916 (pp. 139, 143).

Morgan's own testimony of how in 1911 or 1912 a passing

English tourist suggested to him the use of borax to reduce decay is typically mythical. Morgan testified that he could not recall the man's name, had never seen him before or since and did not act on the suggestion until years later (pp. 139, 148).

Taking Morgan's own figures for tank capacity and amounts of "borax" used prior to 1925, and neglecting loss of borax by precipitation in softening the water, his testimony, even if credible and corroborated, would show not more than a small fraction of a per cent of borax in the tank water, too little to effect blue mold decay reduction, especially since, as Morgan's former foreman Wood testified (p. 422), fresh water was afterward showered on the fruit to thoroughly rinse the fruit off while it was being scrubbed on the revolving brushes to which it went from the tank. Wood also described the tank as much larger than stated by Morgan, so that, taking Wood's tank dimensions (p. 419) and a mean of his highly indefinite weights of "borax" (p. 421), there could not have been more than a few hundredths of 1% of borax in the tank water at the very most. In fact, *Wood admitted that he did not know whether the material added to the water in the tank was borax or washing powder or soap powder* (p. 423).

There was no proof that the alleged use of borax effected decay reduction. Counsel for plaintiff demanded, both in the California deposition and at the trial, that if records as to this existed they be produced; and although Morgan indicated in his deposition that there were such records, *they were not produced* (pp. 158-9).

It is significant that nobody was called from the local grocery store or from the Fruit Growers Supply Company to corroborate Morgan's story about his early purchases of borax notwithstanding the fact that, if Morgan is to be believed, he must have used on the average over 1200 pounds of borax each season from 1916 to 1927 (pp. 138, 147-8, x-Qs. 139, 148).

It is also significant that Ramsey, Field Manager of the California Fruit Growers Exchange, who, Morgan testified on

cross-examination, had known Morgan's methods for "Oh, I should say 5, 6 or 7 years" (pp. 153-6), was not called, nor was the failure to call him explained in any way.

Clearly the Morgan "use" is not only unproved but is disproved.

The Davis and Howard "uses":

Davis asserts that in 1907 he began using something he calls "borax" in the packing house of the A. F. Call Fruit Company at Corona, California. Kelly, a man of eighty two, whose last employment was in 1919, was called in an attempt to corroborate Davis.

Howard alleges that he himself used "borax" at the packing house of the Corona Packing Association, also located at Corona, at a later date, as the result of being instructed by Davis how it should be employed.

There are no other witnesses as to these alleged uses. No records of any kind are produced, although Davis hints at their existence (Vol. I, 434, fol. 532). The failure to produce them raises the presumption that they would not have supported his statements.

Although the testimony as to the Davis use is confusingly vague and loose, it is apparent that what Davis used was not borax, but soap powders, cubes or chips which he and Kelley now think contained borax, but which actually did not. Davis talks about borax "in cubes. * * * It was a regular chip. * * * I don't know whether you would call it soap chips or not" (Vol. I, 433); and about "borax chips" purchased from the Los Angeles Soap Company (p. 434); about "borax preparations" (p. 434) and particularly about "Davis Special" soap powder alleged to contain 10 to 20 per cent borax which he says he had made for him in 1917 by the Los Angeles Soap people (pp. 432-3). That Davis was referring to soap powders or similar preparations when he spoke of "borax" is conclusively shown by his answer to his own counsel's question as to what he asked for when he bought "this material you have referred to as

borax, and counsel has questioned you about on re-cross-examination" (p. 441). He answered: "Why I asked for borax *set in the washing powder.*"

Kelley, too, speaks of "borax chips", and "the borax chips was in the shape of a kind of a soap" (p. 450); and this, notwithstanding pronounced leading by his counsel in the attempt to get him to say "borax" (p. 452). He still insisted that what his counsel called "borax" was "kind of like soap" (p. 452).

As to the proportions in which Davis mixed these soap or washing powders with the Gold Dust, lye, etc. which he says he used in conjunction therewith, and as to the quantities of such mixture added to the "800 gallons of water in the washer tank", it is practically impossible to gain any definite idea from his rambling, inconsistent statements, the fact being that he really had no clear recollection on the subject,—"We just guessed at it" (pp. 434-5). Kelley's ideas on this point were no clearer. He did not know how much water the tank held (p. 449). He thought they used "those borax chips, about ten packages", but did not say how much there was in a "package".

The Los Angeles Soap Company, from whom Davis said he bought "borax" cubes, chips, etc. never put borax or other boric compound in any of its products, even though sold under such names as "White Borax" soap, or "Calla Lily Borax" soap, as shown by the testimony of its president, Charles A. Meyer, a witness called by plaintiff (pp. 343-4). Evidently Davis, having possibly used soap preparations with such trade names in the past, had reasoned himself into now believing and testifying that he used "borax" years ago, as he alleged.

But the final collapse of the testimony about this Davis use, and the Howard use also, came with the testimony of Howard, who said (p. 447) that, when he asked Davis what to do for decay, Davis instructed him to use *"about a pound or a pound and a half of borax to 800 gallons of water"*. And Howard said he followed those instructions. Even assum-

ing that, by "borax", Davis actually meant borax as such, that would mean using one part of borax to over 6600 parts of water, *i. e.*, a solution containing less than two one-hundredths of 1% of borax, a negligible quantity even assuming that the small amount of borax so added were not used up in "softening" the water. Further analysis of Howard's testimony is quite unnecessary under the circumstances.

Obviously both of these "uses" were imaginary.

Palmer "use":

This alleged use is even flimsier, if possible, than the others already discussed. Palmer's testimony is a mass of hazy, indefinite statements, inconsistent and contradictory. Like all the other public use testimony adduced by defendant it is wholly unsupported by records of any kind, depending entirely upon alleged recollection of events supposed to have occurred fifteen or twenty years ago. It is wholly lacking in probative force.

Palmer was a small grower who shipped directly to the consumer and washed his fruit in his back yard in an ordinary wash-tub (Vol. I, 456).

Like Davis (p. 122, *supra*), he classed borax and washing powders together, being unable to see much difference in their effect on fruit and using them interchangeably, his *present* belief being that washing powders "are largely composed of borax" (p. 455). As we have already pointed out (p. 123, *supra*), that is an erroneous belief. Palmer said he used a washing powder called "Boraxine" of which he says: "I do not know that I noticed any vast difference between that and borax". (p. 465).

Palmer had no definite idea of how much "borax" he used in his wash tub: "according to my memory, I would use pretty nearly a package—possibly not more than two-thirds or three-quarters. I didn't suppose it was necessary to try to remember it" (p. 463). He even had no definite knowledge as to how large these "packages" were, but thought they were "probably" one pound packages (p. 460). As a matter of

fact, it was really the "slick feel" of the water which guided Palmer in this respect, as he testifies (p. 463), indicating that he was really interested only in softening the water at that time, although in the light of his present knowledge, he looks at the matter differently now after having been told that the "Brogdex solution", as he calls it, is a borax solution. *After* learning that he remarked, as he testifies: "That is old stuff, as I have been using borax for years" (p. 458).

When asked on cross-examination to describe definitely how he conducted his wash-tub operations, he became quite specific in some respects, giving the tub dimensions, the depth of water in the tub and the volume of oranges put in the tub at a time (pp. 468, 463). As a matter of fact, however, it was impossible for Palmer to have washed his fruit under the conditions he prescribed. This was conclusively shown by the testimony of plaintiff's witness Barke (p. 344) who, following the specifications given by Palmer, found that the oranges were heaped up far above the level of the liquid in the tub, rendering washing an impossibility, and that half the oranges had to be taken out before the surface of the liquid was exposed. Obviously, if Palmer was so far out of the way in recalling the capacity of an orange field crate after being in the business for so many years, there is no reason to suppose he was any more accurate in his recollection of the many other things to which he testified *without records or other corroboration.*

Palmer testifies vaguely as to having washed some of his fruit at the local packing house "adding borax *or* washing powder, *possibly* both in the packing house washing" (p. 459); but he "never measured it" (p. 460).

It is hardly necessary to state that there is no corroborating testimony of Palmer's "uses". No witnesses were called by the defendant to testify in regard to Palmer's alleged use of borax in the packing house, although he testified that he frequently mentioned his process to a number of named men, now conveniently dead, "and others" not named (pp. 456-7, 466). The only attempt at corroboration of his

use of borax in the tub was the deposition of Burden, a neighbor, who testified that he saw Palmer washing oranges in a tub and that Palmer told him that he was using borax. Burden was not asked as to how much borax was used (Vol. I, 468). Burden's testimony was so negligible that plaintiff's counsel did not even cross examine.

In testifying, Palmer hints at having records of some kind, so detailed as to include an entry of a purchase of forty cents' worth of Gold Dust (p. 465), but it is significant that none of these records was produced. Presumably they would have shown that he used only washing powders.

Plaintiff's witness Turner lived next door to Palmer for ten years—1908 to 1918—but he has no recollection of ever having heard Palmer say he used borax, although Turner used to see him washing his fruit (Vol. I, 564). Furthermore, Turner was part owner and operator of the packing house through which Palmer sometimes shipped fruit *and where Palmer was also employed.* In that packing house it was customary to use in the wash water a preparation known as Schnarr's Insecticide to clean the oranges, *and it made the water look milky* (pp. 563-4). It was an *emulsion* (p. 380). Palmer must have been familiar with the use of this Schnarr's Insecticide at the packing house where he worked; and this is probably what Burden saw him using, for Burden says (p. 468) that when he saw Palmer washing his fruit, the water looked "milky".

It is unnecessary to analyze this testimony further, for its utter insufficiency to establish prior use by Palmer is fully apparent.